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The Government Reports on Rubber.

IT is with no little satisfaction that we are able to present to our readers this month the first instalment of facts brought out by the inquiries into the India-rubber industries of the world instituted by the Government at the request of this journal. When it is taken into consideration how remote are many of the Consular offices; that no organized system of collecting the statistics required existed in many countries, and that the machinery of a great government embraces so many details of importance that any single undertaking must necessarily proceed slowly, the delay in presenting this information is not unreasonably great. There is reason for regret, of course, that the statistics given in many cases are two years old. It is worth something, however, to get reliable data pertaining to India-rubber in all countries, no matter for what year, which may be used as a starting point on which to base future statistics, estimates and calculations. We are pleased especially at being able to present the statistics gathered, in advance of their publication in any other form, and we can safely promise to print a great deal more matter, as a result of this investigation, in the near future.

The result of this investigation may be summed up as showing that while wasteful methods of rubber-gathering have been general, it will be a long time before the rubber supplies of the world can be decreased materially. On the contrary the total production of crude rubber is steadily growing, while the preservation of the rubber tree is coming to be regarded as of great importance. The British Government has seriously undertaken the protection of all the rubber forests within its empire, while the various republics of South America are beginning to be interested. As the principle of local self-government is extended in the countries south of us, the effect may reasonably be expected to be a greater regard for the future of the sources of wealth of the people than when vast areas of territory were governed from remote capitals by individuals having only their self-interest and aggrandizement in view.

It is of great importance that the fact seems to be established that the world's supply of Gutta-percha is not so near an end as was once feared. Facts are coming to light in regard to Gutta-percha forests the existence of which was, until late, unsuspected.

There is now no doubt of the practicability of cultivating rubber trees, by means of which forests now abandoned may be restored and become, under more intelligent methods, even more profitable than while in their virgin state. The people in those sections of the United States where the sites of forests once ruthlessly wasted are now covered by a promising growth of young timber, may well appreciate the possibilities in the direction of restoring rubber forests. To use another illustration, the profitable cultivation of coffee trees, which it was once thought would prove prolific only in their native state, suggests the possibilities of similar results from the artificial treatment of rubber trees. As a matter of fact, there has never been any pressing need for rubber-tree culture, which renders all the more creditable the enterprise which has demon-

strated on both hemispheres the susceptibility to cultivation of every important rubber-producing species in case the need should ever arise.

Some interesting facts from authentic observation are presented this month in relation to rubber-gathering methods, which will help Americans who are interested in the sources of crude rubber to decide how far it will be wise to enter the business of gathering it.

The extent and character of the rubber-manufacturing interests throughout the world remain to be discussed in subsequent issues of our journal.

The editor wishes to acknowledge, in this connection, the hearty co-operation of the Government at Washington in the attempt to benefit the India-rubber industry as far as possible. In the opinion of one official of prominence, this is the most interesting and important special investigation of a commercial character ever set on foot by the Government. It is desired to make special acknowledgment to Mr. Michael Scanlan, Chief of the Bureau of Statistics of the Department of State, for courtesies extended.

An Exceptional Year in Rubber.

THE past year is shown by the official figures to have been an exceptional year in more respects than one in the India-rubber industries of the United States. Taking the imports of India-rubber and Gutta-percha—chiefly the former—for the year, the total will be found far beyond that of any other year, which argues a rate of consumption greatly above the average, for stocks of crude rubber are not appreciably greater than in former years, and we have not been heavy exporters of the raw material. The growth of imports year by year, measured by dollars, is shown by these figures:

Value of imports in 1886	$14,180,301
Value of imports in 1887	14 389,499
Value of imports in 1888	14,228,358
Value of imports in 1889	12,503,254
Value of imports in 1890	16,719,604
Value of imports in 1891	18,461,175
Average of five years, 1886–90	14,404,203
Increase in 1891 over this average	4,056,972

This ought to be a pretty good answer to the complaint, which some people make, that manufacturers *don't put as much rubber* in their goods as they did when we were all boys. Then it ought to quiet all talk of the danger of the possibility of rubber ever being cornered within this century. When the sources of supply of a commodity are capable of such an increased yield as is indicated by the imports of crude rubber into the United States, it is not a good time to spend good money in trying to monopolize the supply. One might as well try to "corner" the eggs in all the farmyards in the world.

The comparison of exports for 1890 and 1891 may be made in more detail, including the separation of Gutta-percha from India-rubber in the record of imports, as follows:

	Pounds.		Value.	
	1890.	1891.	1890.	1891.
India-rubber	34,353,417	37,401,634	$16,682,484	$18,298,092
Gutta-percha	252,394	802,474	37,120	163,083
Total	34,605,811	38,204,108	$16,719,604	$18,461,175

A marked increase is to be seen in the quantity of Gutta-percha imported, a rate of growth, by the way, which no one need to be surprised to see maintained. No civilized people now know much about the sources of Gutta-percha, but this is too valuable a commodity for its sources to remain much longer hidden in jungles penetrated only by savages. There is a probability that intelligent methods, backed by capital attracted by commercial necessities, will yet make Gutta-percha more plentiful in the world's markets than ever before. Only a foretaste of the matter of increased imports in this line has reached us yet.

The importance of thus separating the Gutta-percha and India-rubber figures in the statistics of imports is sure to be marked in time. Our readers will recall that it was at the request of THE INDIA RUBBER WORLD that the Government adopted this change in its bookkeeping methods.

Of the great amount of crude material imported we exported unmanufactured only 56,444 pounds of Gutta-percha and 1,723,258 pounds of India-rubber. From what remained the enormous demand in this country for rubber products was so well supplied that we needed to import in 1891 only $403,834 worth of such goods, which, however, was a slight increase over 1890, with $348,023 worth.

In the matter of exports of domestic manufactures of rubber the usual rate of increase is maintained. The comparison is as follows:

	Pairs.		Value.	
	1890.	1891.	1890.	1891.
Boots and Shoes	147,964	214,526	$ 126,130	$ 173,905
All other			1,049,021	1,175,586
Total			$1,175,151	$1,349,491

It may be worth while to consider how the export trade in rubber manufactures has grown for the past five or six years, according to the figures published by the Government, given herewith:

Value of exports in 1886	$ 782,610
Value of exports in 1887	846,096
Value of exports in 1888	833,126
Value of exports in 1889	937.497
Value of exports in 1890	1,175,151
Value of exports in 1891	1,349,491

To repeat what has often been stated in these pages, the greater part of this foreign trade has been obtained without special effort upon the part of our manufacturers. Many of these are becoming interested, however, in how best to deal with the question of selling goods abroad, and we shall have something further on this subject to present to our readers from the fund of information gained through the special Government inquiry on India-rubber.

Prejudice as a Factor in Trade.

IT may seem strange to some of our manufacturers that the sale of their products abroad is sometimes prevented by mere prejudice, which the excellent quality of the goods alone is not able to overcome. It is necessary generally, in making an opening in a foreign market, to place the goods in the hands of persons able and prepared to do some earnest work in recommending them and answering objections to them. An American traveller reports that a few years ago he saw in Valparaiso, at the opening of the first

railroad, a test between an American and an English locomotive, the result of which was most decidedly in favor of the former. At least the American locomotive was stronger and more easily managed, but those having in charge the making of a purchase were in the habit of buying from England, while they entertained the idea that American products were inferior. The English locomotive was purchased, therefore, despite the failure of the one sent on trial, the buyers not accepting the evidence of their own eyes. It will be found, where American firms have succeeded in getting a strong foothold abroad for any of their products, that it has been at a very heavy initial expense for gaining an insight into the tastes of the people to be supplied, and in overcoming their natural disinclination to try a new thing.

This ought not to seem strange, however, to any one who will reflect upon the like prejudices to be met with here at home. There are doubtless very many intelligent people in our own country who cannot be made to believe that English mackintoshes are not far superior to anything that can be made here. There are many goods of home manufacture sold in this country which would never find purchasers were they not represented to be of foreign manufacture. A good illustration is to be found in the case of a well-known restaurant in New York City, which long has been noted for the quality of the ale kept on draught there. The thousands of customers of the place believe the ale to be of a noted foreign brand, whereas it is a fact that for twenty years past none but domestic ale has been sold at the place in question. The proprietor of the place early found that it would be easier to deceive the people in regard to his ale than to overcome their prejudice against a new thing, no matter what its quality might be.

In the matter of dealing with foreign trade it would naturally seem wise to follow the example of those older countries which have developed their foreign trade to the highest degree. Germany, for instance, was selling largely of her manufactures to foreign countries before the United States was able to supply its own needs. Yet to-day the question of how to find new markets is as live a one as at any time in the history of that country, if not more so. An important representative of German trade interests, *Kuhlow's*, in a recent issue, points out that the only way to obtain an important lasting trade in a foreign country is by a long residence in that country by representatives of the house seeking trade. Just now the Germans are trying to increase their sales of goods in Japan, and *Kuhlow's* insists that not much can be done in that direction if the would-be exporters stay at home, instead of going out and learning what the Japanese want and what prejudices are to be overcome. It will not be long before American manufacturers will be able to supply the demands of the greater part of the world for rubber goods. It is not too early for them to begin to study the methods by which other countries secure outside trade.

TRAVELLING cases made of India silk and lined with rubber are durable as well as useful. All the different pockets are of rubber and the case folds up compactly.

New Publications.

THE "SCIENTIFIC AMERICAN" CYCLOPEDIA OF RECEIPTS, Notes and Queries. Edited by Albert A. Hopkins. New York: Munn & Co. [8vo, cloth, p. 675, $5.]

IN a brief notice of this publication in our last issue an injustice was done in stating that but few references to the India-rubber industry were contained in it. It is true that under the heading "India-rubber," in the alphabetical arrangement, but little matter is printed, though under "Rubber," in another part of the book, considerable matter of value appears, including an illustrated article on "rubber stamps." Besides, throughout the volume incidental mention is made of India-rubber; thus under "Rust" are two receipts involving the use of rubber in the prevention of rust.

INDIA-RUBBER: ITS MANUFACTURE AND USE. WITH ILLUSTRATIONS. By George N. Nissenson, author of "Practical Treatise on Injectors." New York: The Author. [8vo, paper, p. 45, 75 cents.]

THE writer of this pamphlet undertakes to give some account of the sources of India-rubber and of the processes of manufacturing it for the various purposes for which it is principally used. He does not attempt such full treatment as would enable a beginner to make hose or belting or shoes without other instruction, but only to give the reader on the outside some general idea of how these goods are made. By the way, he should revise his rubber statistics. Thus he writes that Pará "exports about 18,000,000 pounds of rubber annually, more than half of which is sent to England." This country alone took more than 23,000,000 pounds of Pará rubber last year, and it has been a long time since England's imports of this rubber equalled those of the United States.

Manufacture of Rubber Bands.

THE manufacture of rubber bands in this country is carried on by three or four manufacturers in New England, about the same number in New York and one in Ohio. One manufacturer in New York does little else than to make these goods. As can be surmised the business is of considerable proportions, bands now being sold by the pound when thirty years ago they were priced by the gross. The price has gradually fallen from about $7 to $1.25 per pound, but manufacturers claim that money is made at the latter figure, although it is harder work to get a living now in the trade. Very few red or maroon brands are made, but that sort is claimed to be superior. There are, however, different varieties of maroon bands, some being colored in imitation with cochineal. Gray bands are often cured with oxid of iron, and again with potash.

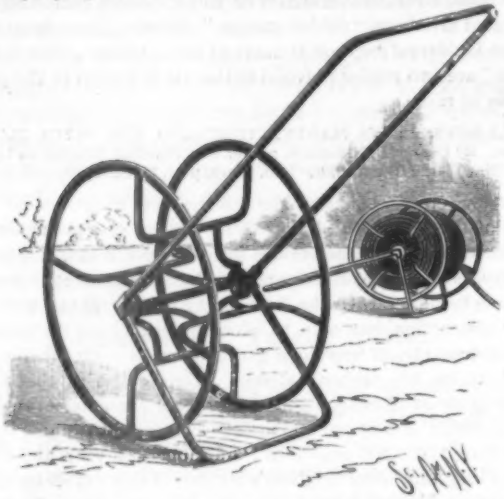
The foreigners make a good band but the tariff prevents their importation and very seldom any are seen in this country. The French have considerable reputation in their manufacture.

The consumption of these bands is constantly increasing. All metropolitan stores sending out small packages prefer them to twine, which takes time to manipulate. Theater, steamboat and railway agents constantly use them, and hardly an office in the land does not have need of them for the proper fastening of loose papers. They are made as long as five inches and three-quarters of an inch wide or in the tiny rings denominated "election."

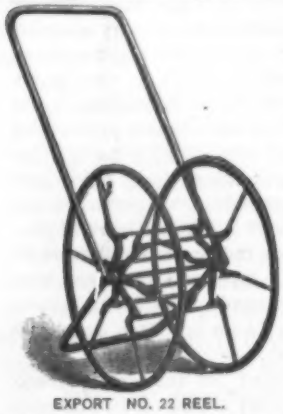
Probably the first manufacturers of bands in this country were the Davidson Rubber Co., leading makers of them yet. The life of a band is about eighteen months, which supplies all practical needs, but in Government use a better band is demanded, which lasts very much longer.

NEW GOODS IN THE MARKET.

A NOVELTY in hose-reels is one constructed entirely of wrought-iron pipe and malleable iron. The first advantage to suggest itself is that of durability, and the manufacturers claim to be able to make them lighter in weight than it is possible to make wooden reels of equal strength. The accompanying cuts show different styles of the Wirt iron hose-

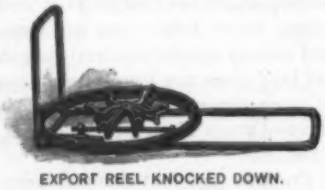


reel, the largest cut showing the reel in two positions. In the back-ground the reel is seen with handle and brace resting on the ground, with the wheels supported and the reel free to turn for winding or unwinding the hose. In the larger figure is shown the position of handle and brace when not in use. Its circular sections, instead of being united by welding or coupling-collars, are joined by rivets passing through them and through a filling block of wrought-iron. Angular arms of malleable iron unite the circular sections, one of the arms having a cleat on its inner face for fastening the ends of the hose. The handle is free to turn over or about the axle of the reel and is connected at its inner ends with elbow couplings of malleable iron.



EXPORT NO. 22 REEL.

This reel is made in three sizes, with wheels from 21 to 30 inches high, and capacity for 100 to 500 feet of ¾-inch hose. The newest feature of the Wirt reel is a style for the export trade, so constructed that by taking off a nut on one end of the axle the whole reel can be readily taken apart and boxed in a very small space for shipping. In cases where freight is charged by the amount of space occupied the advantage of this feature will readily appear. A cut is shown of the "Export No. 22" reel in readiness for use and also as "knocked down" for shipping. Other sizes and styles are also made, including reels for mills, factories and villages, for conveying large hose for fire protection. The same firm make wooden reels of the same general style as their all-iron reels. Manufactured by the Wirt & Knox Manufacturing Co., Independence, Mo.



EXPORT REEL KNOCKED DOWN.

The Delano Atomizer.

THE treatment of inflammation of the nose and throat with oil, vaseline or some of its modifications is universally established and regarded as the best method for these complaints. The Delano Atomizer, shown in the cut herewith, is made especially for this sort of spraying and has given general satisfaction. It is very simple in construction, which is a great recommendation as it is not liable to get clogged up, and produces a strong heavy spray. It is designed for atomizing oil, vaseline, fluid cosmalene, benzoinal, glymal, etc. The tube is long enough to be used in the throat and the bottle may be held in a horizontal position as the shape of the air tube prevents any overflow. The metal tube and screw top are nickel and the bulb is fitted with metal valves. This instrument is manufactured to supply the popular call for a good article at a moderate price. Manufactured by Z. Delano, Boston, Mass.

DELANO ATOMIZER.

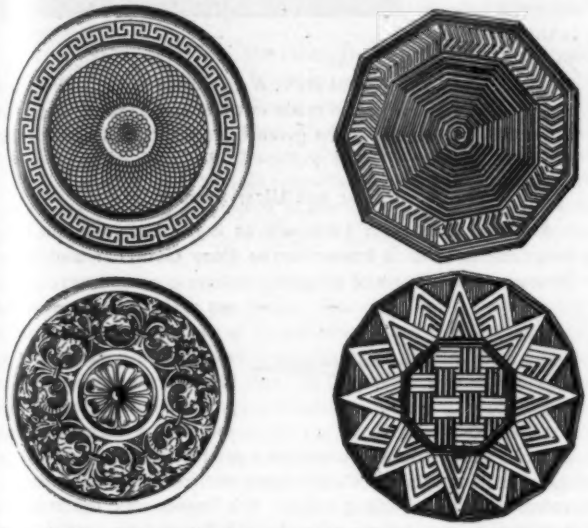
"Fifth Avenue Newmarket."

IT looks very much as if the puff shoulder were a thing of the past. In ladies' fine cloaks it has rapidly disappeared, its place being taken by the stylish military cape. As the mackintosh trade follows close in the wake of the cloak trade it is natural that the military cape should be at once popular there. A style that is coming to the front rapidly and that is said to be the style for the coming season is what is known as the "Fifth Avenue Newmarket." This is made in single textures with silk-lined capes. The garment is in every way finished in the best possible manner, the button-holes being stitched in silk and the greatest care being taken in the cut and in the make up. As this is made in 150 patterns of cloth, to which may be added anything in the line of fabric that is wanted, it will be seen that there may be a wide range in price for the different garments. As a matter of fact these goods may be made all the way from $5 to $30. While the cloth varies the vulcanized rubber compound that is calendered on the cloth does not vary. It is the same for all grades, is carefully steam vulcanized and its finish is as soft as the softest fabric. This cut represents but one of the styles made by the Reading Rubber Manufacturing Co., Boston, Mass.

NEW LADIES' CAPE.

New Styles in Glass Mats.

NEW and beautiful designs in molded rubber are constantly being put on the market and in no one line has more thought been expended than in rubber mats. A set of extremely artistic patterns in what is known as "glass mats" is shown in the accompanying illustrations. These mats are used in drug-stores, restaurants, saloons, barber-shops, or in fact in any place where any sort of drink is sold by the glass, they protect marble or wood counter from stains and entirely do away with that sticky feeling that is so apt to be noted on a marble counter. The danger that a glass may be set down too hard and be fractured



is entirely overcome by the use of this tiny mat. They are so neat and of such attractive design and withal so cheap that they are sure of a very large sale. The rubber of which they are molded is a fine soft, durable compound and is vulcanized either in black, red, or white. Special patterns with or without initials can be made by a slight alteration in the mold. Manufactured by the New Jersey Car Spring and Rubber Co., Jersey City, N. J.

The "Velvet" Water-Bottle.

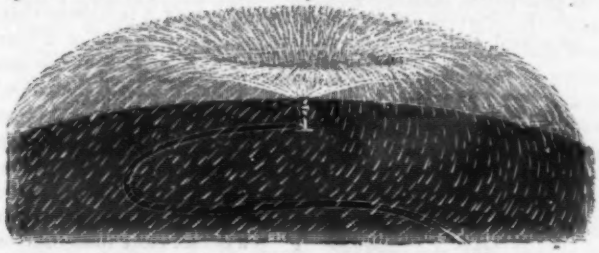
WHETHER a man be married or single, cold feet are a curse. Physicians advise that the extremities be always kept warm. For insomnia a well-filled hot-water bottle has been known to be a radical cure. Within the last few years the water-bottle has wonderfully grown in favor the country over. There are, to be sure, country people who still retire on winter nights with an earthen jug of hot water or a hot brick or flat-iron, but they are more and more learning the luxury of the rubber hot-water bottle. The bottle now in use is generally well made and when stamped with the name of a reputable company will last a long time. One of the finest pieces of rubber ware that is to-day put on the market is what is known as the "Velvet" Water-Bottle. This

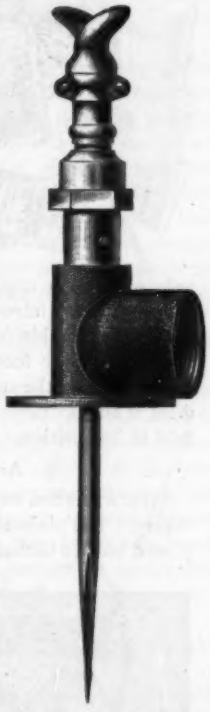
"VELVET" WATER-BOTTLE.

is made up of tan-colored rubber, very carefully finished and of the strongest possible material. When it is known that the company who manufacture this spent a year in experimenting to get the color exactly right it will be seen that they are anxious to have the best goods and that they spare no pains to attain that end. With seams that cannot leak, with a rubber funnel about the fitting for use when pouring the hot-water in and a water-tight stopper the "Velvet" Water-Bottle would seem about perfect. It is made in four sizes, one, two, three, and four quarts. Manufactured by the Davidson Rubber Co., Boston, Mass.

The "Water-Witch" Lawn Sprinkler.

SO MUCH thought has been put upon lawn sprinklers that it was confidently stated years ago that high-water mark had been reached. In spite of this prediction, however, comes a new sprinkler and one that is radically different from all others. It





is the result of careful calculation of all the conditions under which water is placed when it is sprayed over a lawn, and the removal of any features that tend to diminish the force of the throw, or that invite friction or clogging. The new sprinkler is known as the Water-Witch, and is already in the forefront of the season's popular sellers. The tip on the sprinkler is so arranged that the pressure causes it to revolve rapidly somewhat on the principle of the Barker's mill, familiar to students of natural philosophy. Only enough pressure is exerted to keep it whirling, the rest being used in distributing the water. The curve of the lips is so mathematically exact that an even distribution of the drops is attained, while a very large area is watered. A circular area from twenty-five to forty feet can be thoroughly sprinkled by the Witch, depending in a measure of course upon the water pressure. It is made in three styles, No. 1 tapped for ⅜ iron pipe; No. 2 for ¾ hose coupling, and No. 3 is that shown in the cut mounted on an iron stand. This is shod with an iron spike which enters the turf and holds the sprinkler in position. If it is desired the nipple between the sprinkler and the stand may be taken out and a piece of pipe put in, raising the sprinkler to any desired height above the lawn. Manufactured by Peck Brothers & Co., New Haven, Conn.

Hardware Specialties of Rubber.

THE Hodgman Rubber Co. have met with no small success in introducing among hardware-dealers the Rubber Elastic Force-Cup which they manufacture. The use of this device is

to clear discharge-pipes of wash-bowls, bath-tubs and wash-tubs when they become partially or entirely stopped. The principle is that by impulsively forcing water through the obstructed pipe the latter is generally cleared. The action of the instrument is to allow water to flow into the bowl or tub, to a depth of three or four inches, when the rubber cup is placed directly over the vent, and the handle is

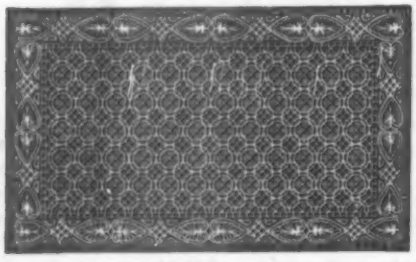
forced down three or four times with a quick motion. This is found effective for all obstructions located within twenty feet of the vent. Its cost is slight, especially when compared with a plumber's bill, being $1 for the largest size, 4½ inches in diameter; 75 cents for a cup 3¼ inches, and 50 cents for 3 inches. The accompanying illustration will present a clear idea of the device. The Hodgman company also are selling to hardware-dealers a soft rubber soap-dish.

Rubber Corset-Laces.

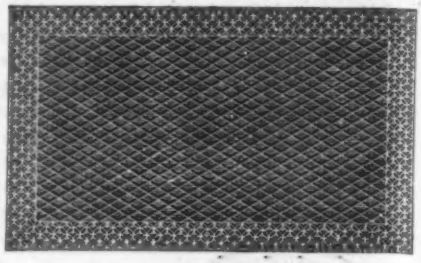
CORSET-LACES are now made of rubber and it is claimed that, once used, they are never abandoned. They permit of a freer movement in stooping and allow of free respiration, the latter being a great boon. It is also a saving in the obviating of the breaking of bones, some ladies being unable to wear a corset more than once or twice before it is damaged in this respect, and this applies as well to the expensive garment as the cheaper. The cord is round, tinned at the ends, and is made of silk or cotton web. The cotton ones when first brought into the market retailed for fifteen cents, but the price has now been reduced to three cents. In connection with it is a rubber shoe-lace, now being introduced, which is a great relief to the pedestrian who is on his feet much of the time. A congress shoe is very easy to the foot, but is apt to get out of shape and give less support to the ankle. With the rubber shoe-lace the movement is not restrained in a long step, and still the shoe is firmly held in its position.

Art in Rubber Door-Mats.

TIME was when any sort of rubber mat was looked upon as a luxury. The plainest patterns and the crudest workmanship passed muster because it was rubber. To-day, however, with artists at work on initial and signature mats, with hundreds and thousands of patterns, it is something extra fine that attracts even passing attention. There is no doubt that molded rubber always gives more accurate results than rubber that has been fashioned by cutting-tools, supposing of course that the molds are well made. To make a door mat in a mold involves considerable expense, especially if the pattern is to be ornate or elaborate. As every different style necessitates a different mold it will be seen that a small fortune could soon be locked up in property of this kind. The molded mat has also a further advantage over the perforated article in that the recessed cavities hold the dust and mud and keep it from stenciling itself upon the floor. Two beautiful patterns of mold work in door-mats are shown here. The engraver has so faithfully copied the article itself that a detailed description is not necessary. Both of the designs shown are patented, and are but samples of a host of others manufactured by the company that put these upon the market. The first style, *A*, which is known as an ornamental door mat, is made in three sizes, 18x30, 18x36, and 24x36 inches. The second style, *B*, is known as the "diamond cell" door-mat and is also made in three sizes, the dimensions being the same as those first given. Manufactured by the Boston Belting Co.



STYLE A.



STYLE B.

An Ear and Ulcer Syringe.

AN article that is far from new, as it has been a staple for a long time, is what is known as the Pure Gum Ear and Ulcer Syringe. All makers of druggists' rubber goods, however, have not made it in the past, and a well-known manufacturer who has just added this to his list sends the accompanying cut. The syringe, which is a very neat piece of mold work, is made entirely of rubber, and is really pure gum, the compound being Pará rubber with enough sulphur to vulcanize it and nothing more. It is largely used for injecting hot water into the ear to reduce inflammation, and for the cleansing of ulcers and sores. It belongs to the popular line of "Tyrian" goods manufactured by the Tyer Rubber Co., Andover, Mass.

Rubber Goods for Miners.

THE foreman of a large rubber-manufacturing company writes to the editor of THE INDIA RUBBER WORLD:

"We are making large numbers of miners' coats and would be pleased to see any information in the WORLD relating to them—as to the conditions they are subject to in different mines, etc.; in fact, anything that will lead to the making of a better article than at present. These coats now last about thirty days. To be sure the faster they wear out the more there will be to make, but we would like to make a coat that will pay the company better, as well as the miners."

On the first page of the leading Australian mining journal is prominently displayed an advertisement for India-rubber "specialties for mines," in which the following items are enumerated:

"Rock drill hose, plain, also covered tarred marline; rubber and canvas delivery and suction hose; woven flax hose for sluicing; rubber buffers for rock drill machines; rubber valves for tailings and other pumps; rubber and cotton canvas belting; asbestos packing and millboard; rubber and insertion sheet for joints; rubber boots; electric bells, wire, and batteries."

THE imports of crude India-rubber into the United States in October 1891 reached the exceptionally large amount of 4,925,290 pounds, valued at the custom-house at $2,075,119. This gives an average price of a little over 42 cents per pound.

Downfall of the Pará Rubber Shoe Co.

[BY OUR BOSTON CORRESPONDENT.]

THE Pará Rubber Shoe Co. have resolved to go out of business after an exceedingly eventful history. Among those who had capital invested in the enterprise are some of Boston's leading and shrewdest financiers. That these gentlemen know less regarding the manufacture of rubber than of banking, stocks and bonds, is evident, and this alone is very largely responsible for the fact that many thousands of dollars have been invested at a loss and that one of the largest and best-equipped factories in the country is now idle. The history of the rise and downfall of this once flourishing industry is replete with interest.

The first conception of the enterprise originated in the fertile brain of the late John H. Stickney, early in the year 1881. Mr. Stickney for some twenty-five years had been closely allied with the rubber trade, having been at one time associated with T. C. Wales, one of the incorporators of the Wales-Goodyear Rubber Co. Through his thorough acquaintance with the rubber business Mr. Stickney succeeded in associating with him Mr. A. L. Coolidge, of Houghton, Coolidge & Co., boot and shoe manufacturers. The two went to work and by the latter part of that year they had succeeded in pledging $200,000 worth of stock, at the par value of $100 per share. They had the concern incorporated under the laws of Massachusetts and early in 1882 work on the factory at South Framingham was commenced. As an inducement to locate the plant at that place, the projectors of the enterprise received very material aid from the citizens of the town, who organized under the name of South Framingham Manufacturing Co. They now own a portion of the plant which is leased to the Pará company, with the privilege of buying at any time. No sooner was work on the factory commenced than the capital stock of the company was increased to $500,000. The original officers of the company were: A. L. Coolidge, president; J. H. Stickney, treasurer and clerk; A. L. Coolidge, J. H. Stickney, Ezra Farnsworth, S. D. Warren, Oliver Ditson, William O. Grover, Oliver Ames, Henry Mason and Samuel Johnson, directors. The factory was completed and the first product put upon the market in August, 1882. At this time the stockholders numbered between forty and fifty, the heavier investors being the officers above named and John N. Dennison.

The plant although now badly out of repair was at the time of its completion all that could be desired. Covering an area of nine acres it was fitted up with the most modern machinery, this alone costing half a million dollars. Employment was afforded to more than 1200 people, many of them women, and the capacity of the factory was 17,000 pairs of boots and shoes per day. Power was furnished by a 1000 horse-power steam-engine, and a 22 horse-power electric-light plant with 900 incandescent lights most admirably performed its intended function. During the last year that the plant was run there were used 1,472,458 yards of cloth, while of chemicals and rubber the quantity used was 3,779,655 pounds.

As indicated by the name of the corporation, its purpose was the manufacture of rubber boots and shoes. Of these three grades were made: "Pará," "Amazon" and "Goodyears." For awhile the manufacture of rubber clothing was attempted but as it was found that it did not pay that branch of the business was soon dropped. The goods were sold over the entire country, particularly through the West, while not a few were exported.

Everything went along smoothly for some time. While the dividends were conspicuous by their absence, no dissatisfaction was expressed by the stockholders, as they had confidence in the men they had placed at the helm and firmly believed that in time they would bring the concern out of debt and upon a paying basis. Such, however, was not destined to be the case. The debts continued to increase and the factory to run at a loss.

In 1887 more money was needed and the capital stock was increased again, this time to $1,000,000. This move served to increase the number of stockholders to sixty-five. From this time on a dark cloud began to gather in the sky of the company's hopes. Like the biblical cloud, it was only a small affair at first, but it grew and grew until it assumed alarming proportions and finally, at the annual meeting held in April, 1891, it burst. This meeting served to disclose the fact that the concern was very far away from being on a paying basis and resulted in opening the eyes of a number of the shareholders who had hitherto taken but little personal interest in the management of the company's affairs. The meeting adjourned from time to time until June 15, when a new board of officers was elected as follows: President, William T. Hart, president also of the Continental National Bank; Treasurer, Alpheus H. Hardy, a financier; Directors, W. T. Hart, A. H. Hardy, W. O. Grover, J. N. Dennison, E. P. Mason, J. Montgomery Sears, George D. Clapp, Clement S. Houghton and William Cabot Loring.

When the new board of directors got together they discovered that the company was not only badly in debt but that it was getting deeper into the mire each day, as the business was only being conducted at a loss. At once they voted to shut down, and since then the works have been idle. Far different with those who had their money invested in the concern. They have not by any means been idle. On the contrary they have been exceedingly busy figuring and planning as to the best method to pursue to enable them to get the largest amount possible out of what they have become convinced was a poor and ill-advised investment.

To start up or not to start up became the all important question; to sell out or not to do so.

In the meantime President Coolidge had died, as had also Treasurer Stickney—the former in July, 1891, and the latter in November, 1891. The death of Mr. Coolidge caused a very material change in the firm of Houghton, Coolidge & Co., who were the selling agents of the Pará company, and who under the old arrangement could always be depended upon to advance money when it was needed. It was not easy, as the new board of directors found, to make other arrangements for money, and as the stockholders could not be depended upon for the very necessary wherewithal something had to be done.

"Who will advance us some money?" now became the query, and echo answered "Who?"

It should be stated that the stockholders felt that by the deaths of Messrs. Coolidge and Stickney the concern had been deprived of the experience in management and the knowledge of practical details so essential to success, and as the directors and new officers possessed but a limited experience in the rubber trade, and also as their time was so fully occupied in other pursuits as to make it impossible for them to devote the time necessary to the work of reorganizing under a new management, they became more or less discouraged.

All of these facts and conditions led to a meeting being called in the latter end of January to take final consideration of the situation. The attendance of stockholders and others interested in the rubber trade was very large. The first business was the election of Mr. Thomas P. Parsons, formerly bookkeeper for the company, clerk, to succeed Mr. Stickney, deceased. It was then stated that $1,000,000 had been sunk in the enterprise. That is, this amount had been paid in for stock, there being 10,000 shares. Only a short time ago this stock was rated at

$42.50 per share, but now it would hardly sell for half that amount, so it was stated. This is how, as stated to the meeting, this rating was arrived at: The factory at South Framingham was rated at $200,000 and the quick assets at $225,000 more. It now appears that the quick assets have shrunk to $100,000, or possibly $120,000, giving only $12 per share. The real estate is worth $50,000, and this gives $5 more per share, while the machinery, in all probability, would not sell for more than $25,000. This brings the total up to $20 per share.

After listening to these figures, it was voted at the meeting to sell the plant and that as soon as possible, then to go out of the business of manufacturing rubber boots and shoes. Accordingly Messrs. William T. Hart, William S. Houghton and J. Montgomery Sears were appointed a committee, or rather trustees, to sell the property and to settle up the affairs of the concern. As yet they have done absolutely nothing except to dispose of the raw material and manufactured stock on hand.

In an interview with THE INDIA RUBBER WORLD one of the heaviest stockholders said: "I am in favor of starting up the plant, no matter what it may cost to do so. I am sure that in the end it would prove a paying investment. I am also quite sure that we can get all of the money that will be required to do this. But it is right here that a very great difficulty arises. Where are we to get the help which we would require? We used to employ 1200 hands, but when we shut down these sought, and most of them found, other fields of labor. I have made a careful canvass and I find that there are hardly 500 available hands. Our output was nearly 14,000 pairs of rubbers per day, and we cannot think of running the factory at a profit unless we can make at least 10,000 per day. This would require at the very least 800 hands, and I don't know where we could find half that number."

But it can be considered as a settled fact that under the present management, at least, the Pará Rubber-Shoe Works will never be started up. The property has been advertised for sale. Who will buy? There are rumors and rumors. Many probable purchasers have been named, but with one exception all have denied to THE INDIA RUBBER WORLD that they even wanted the plant, or for that matter the good-will of the Pará company.

This is the exception: Although the negotiations are being carried on with the most sacred secrecy there is no doubt but that the Jaquith Brothers, comprising the B. F. Jaquith Co., are after the plant. That in time they will become the possessors of it, is believed by not a few. They, however, are non-committal. If they do get it, it will be to enable them to manufacture goods for direct sale to their customers. This company's rating is first-class and it is successor to a paying business of fifty or sixty years standing. It was established by T. C. Wales, of the Wales-Goodyear Co. In addition to the Boston house, sons of Mr. B. F. Jaquith are in the wholesale rubber boot and shoe business under the following firm names: B. F. Jaquith, Des Moines, Iowa; E. P. Jaquith, Chicago; Boston Boot Co., New York City. Each concern is reported to be independent of the other, but they handle the same line of goods. The establishment of another house on the Pacific coast, with identical interests, is also thought of by the brothers. Their combined sales at present aggregate more than the product of the Pará company has been heretofore, so that if they should enter into manufacturing, a market for their goods would be assured. In their employ at present are some men of ripe experience in the manufacture of rubber goods.

Here is another thing which greatly troubles prospective buyers: The South Framingham Manufacturing Co. hold a title to a portion of the mill property as above stated, and it will require a payment of $83,500 on the part of either the present Pará company, or whoever succeeds that concern, to the local company referred to in order to get a clear title.

Since the factory was shut down experts have gone through the various departments and made careful examinations. They found the foundations of the machinery and the buildings had been so hastily constructed that they are faulty. The construction of the mill was also on a wrong principle when compared with the more modern rubber-goods manufacturing establishments. Instead of being built in a way to cover so large a surface, which arrangement alone necessitates the employment of 200 operatives to carry the stock from one portion of the factory to another during the process of being made up, the mill ought to have been built five stories in height, or in substantially the same manner as are a number of the great rubber plants to-day in operation in Massachusetts, as in order to successfully compete with these concerns in a business way, a properly-constructed set of buildings is a very important factor.

The experts whose examinations have been referred to estimate that to reconstruct the present Pará company's buildings into what they consider necessary would require a very heavy outlay. One party interviewed figured that, with the cost of the local plant and the large outlay necessary to make it equal to a modern rubber factory, a company could build an entire new structure in a more desirable location, at the water's edge, for instance, where coal and even rubber shipments could be received by vessels and save great expense in freight. His opinion was that help could be obtained cheaper near a city, as employés could live cheaper.

GIL. GILSON.

A Rubber Factory in the South.

SOME of the Southern newspapers have contained lately an advertisement for bids to be received until February 15, for labor and materials required in the erection of the buildings of The Southern Rubber Manufacturing Co., at Chattanooga, Tenn. An additional item of information contained in the local newspapers is the arrival of plans and specifications for such a building from New York. In answer to a letter from this office for further particulars the following letter has been received:

TO THE EDITOR OF THE INDIA RUBBER WORLD: We are now busy with contractors preparing for the erection of our new buildings. They will be located at East End this city, on the Richmond & Danville and Union railroads. The buildings will be 180x110 feet, two stories, and will cost in the neighborhood of $25,000. We shall equip the factory with entirely new machinery of the most improved patterns and we estimate the equipment at $40,000. The contract will be awarded within the next few days and the building at once commenced.

We shall manufacture mechanical rubber goods and specialties under contract. The reasons for locating in the South are several. There is a large demand for mechanical rubber goods in the South, owing to the rapid development of this section of the United States. Labor is cheaper here; there will be a large saving in freight rates to the Southern buyer; we can manufacture cheaper in every way than the Northern mills. Our reasons for locating in Chattanooga in preference to any other point in the South are because of its central position as a distributing point, having ten trunk lines of railroads radiating in every direction, and water communication with the Mississippi River and the Gulf. Consequently we can get our raw material at a low cost of freight. We can also compete with the Western mills, as we can ship to St. Louis by water at a minimum cost. Coal will cost us less than $1.25 per ton delivered at the factory.

The local market for our productions is also large, as Chattanooga is a big supply point for mill and factory supplies, some of the largest jobbers in the South being located here. I am in receipt of letters every day from jobbers in different points in the South who display great interest in the establishment of the rubber factory here and signify their intention of giving us their trade. Respectfully,

CHARLES TIPTON.

Chattanooga, Tenn., January 30, 1892.

The names of the stockholders and incorporators have not yet been made public, but it is understood that they are persons who are familiar with the business of rubber-manufacturing.

A Rubber Company's Offer for a Poem.

THE correspondence copied herewith contains the particulars, so far as yet outlined, of an offer by the Canfield Rubber Co. of a prize for a Columbian Exposition poem:

Hon. George R. Davis, President Columbian Exposition, Chicago, Ill.

DEAR SIR: We will deposit with the treasurer of your organization or with any other party you may designate, $5000 cash, provided the same shall be paid to the person writing the best poem or song, to be read or sung at the opening of your Exposition, the contest to be open to the world, and the prize to be awarded by a committee selected by your organization. There is no way to perpetuate a great national event like having it described in poetry or song.

If this proposition meets with your approval, please let me know as soon as convenient. Yours respectfully,

THE CANFIELD RUBBER CO.,
Ratcliffe Hicks, President.

New York, December 26, 1891.

The Canfield Rubber Co., "The Times" Building, New York.

GENTLEMEN: I am in receipt of your favor of December 26, making a very generous proposition to deposit $5000 to be paid to the person writing the best poem, or song, to be read or sung at the opening of the World's Columbian Exposition.

I desire to thank you for the interest in our great enterprise which your offer indicates, and I will take pleasure in personally laying your proposition before the Committee on Ceremonies, which will have such matters in charge, and will advise you what action is taken upon it. Yours truly,

GEORGE R. DAVIS,
Director General.

Chicago, December 29, 1891.

Rubber Manufacture in Toronto.

THE new rubber-factory of the Toronto Rubber Co., which has turned out recently the first rubber shoes made in the Province of Ontario, is described at length in a recent issue of the Toronto *Globe*, together with a view of the works and the warehouse of the company. The factory has been located at Port Dalhousie, where splendid water-power is given by a fall into Lake Ontario of eighteen feet from the Welland canal. The enormous advantage given by water-power in cheapening the cost of production is expected to be of great value to the company. The factory is so situated that vessels can load or unload cargo at the company's storehouses, while the railroad facilities are equally convenient. Not only is the abundant supply of water desirable for driving the great turbine wheels which afford power for the factory, but it can be so directed as to lessen the work ordinarily required for cleaning the crude rubber before the processes of manufacture begin.

The factory is equipped with first-class machinery for the manufacture of rubber boots and shoes—having a capacity of several thousand pairs per day—rubber clothing, belting, packing, hose, and other mechanical rubber goods, druggists' sundries, etc. The rubber is carried from floor to floor, during the processes of manufacture, by hydraulic elevators, and everywhere water is used with excellent results. The machinery, which is described at length in the *Globe*, is the same that American manufacturers are familiar with.

The president of the company, Sylvester Neelon, is a man of large business interests in the Dominion and an ex-member of Parliament. Vice-President T. MacIlroy, Jr., has been connected with the rubber trade in Canada for twenty-two years past. Secretary M. MacPherson is also spoken of as a business man of wide experience. The superintendent is Thomas J. Sheehan, formerly in the employment of the Boston Rubber Shoe Co., and the selling-agent for the boot-and-shoe department, James A. Young, has been for eight years past manager of the business of the Lycoming Rubber Co. for the Dominion. The factory began with 100 operatives, chosen principally from rubber factories in the United States.

Mr. Case was Not a Stockholder.

TO THE EDITOR OF THE INDIA RUBBER WORLD: In looking over your last issue, we notice the statement that the Hon. J. I. Case, who died recently, was a heavy stockholder in this company, and that Mr. Case was one of the incorporators of the company and one of the prime movers in getting it started.. At the time of Mr Case's death, he did not own one dollar of stock in this company, neither has he had any interest in it for the past two years, neither was Mr. Case one of the incorporators of the company, nor was he a prime mover in getting it started. When the works were removed to Racine Mr. Case subscribed for $1000 worth of the capital stock in the company, but he disposed of his share as his health began to fail, and he seemed desirous of concentrating his interest in as small a compass as possible. It is in justice to Mr. Case and ourselves, that we ask you to make this correction.

CHICAGO RUBBER CLOTHING CO.,
George H. Laughton, Manager.

Racine, Wis., January 26, 1892.

The Interest in Ramie Culture.

TO THE EDITOR OF THE INDIA RUBBER WORLD: Your recent article on Ramie was very interesting and I hasten to add a mite to your information. Our State has appropriated $10,000 to encourage experiments in ramie culture. Experiments have been conducted on J. B. Haggin's ranch with different decorticators. The question of decortication has been thoroughly tested at the Paris Exposition and on other occasions, and the capacity of the various machines has been demonstrated. French machinery has been imported for the experiments in this State. The fiber has also been manipulated on cotton machinery of the California Cotton Mills, at East Oakland, but not with the best of success. Recent letters from the Hawaiian Islands state that active steps are being taken to promote the culture of ramie. The Toppan system of preparation is to be used, and it is expected in another year's time enough will be raised to furnish a supply that can be depended upon.

J. L. R.

San Francisco, Cal., January 22, 1892.

THE number of pairs of rubber boots and shoes exported from the United States during October was 42,095, against 15,688 pairs in the same month of 1890.

Rubber-Trading on the Congo.

THE Belgian Company for Commerce on the Upper Congo have secured during the past year ivory and rubber worth $165,893 in the Antwerp market. Their expenses for the year were $104,910, including a loss of $10,000 due to a fire. They think, therefore, that a very good profit has been made, considering the high cost of transportation from Stanley Pool to the Ocean. They say that the profits of trading will be more than doubled as soon as the railroad now building on the Congo can be utilized.

The Commercial Syndicate of Katanga has been organized in Belgium, to trade on the Lomami River and the Upper Congo as far as Stanley Falls. The plan is to buy ivory and rubber of the Arabs, and to encourage the natives systematically to gather rubber from the vines which abound in the forests bordering the Lomami River. Arthur Hodister, the explorer and former agent of the Congo Free State, has been appointed superintendent of this new commercial undertaking, and supplied with two steamers for use on the Upper Congo and an appropriation of $125,000 for the first year's business.

Concentrating the Wringer Business.

THE American Wringer Co., the syndicate controlling the manufacture of wringing-machines in this country, it is said, will enlarge its plant at Woonsocket, R. I. (formerly that of the Bailey Wringer Co.) and concentrate there certain branches of the industry hitherto widely scattered. At a recent meeting of the directors at Woonsocket, it was voted to erect at once, on land adjoining their works in that town, a main factory 150x60 feet, three stories, of brick; a store-house, 100x60, also three stories, and of brick, and boiler and engine houses, and fit them for the manufacture of the rollers and shafts used in the wringers. It will be a model manufacturing plant, and the concentration of the work will save transportation of the finished parts from one part of the country to another, which has hitherto been necessary to the finishing of every machine.

The annual report of the treasurer of the company shows a surplus of $81,000 after paying dividends. This surplus will be devoted to the new buildings. The president of the company is Mr. Joseph Banigan, president of the Woonsocket Rubber Co.

Failure of the Atlanta Rubber Co.

THE Atlanta (Ga.) Rubber Co.—C. H. Chase, president; S. P. Allen, vice-president, and G. F. Covell, secretary and treasurer—have gone to the wall. First the company gave a promissory note to the New York Belting Co. payable at one day's sight. The next morning a mortgage for $24,091.59 was given to cover the note and on the day following the mortgage was foreclosed by the New York company. The mortgage given the New York company was a second one, a first one for $2500 in favor of the American Trust and Banking Co. having been given previously. A third mortgage was given to the Stoughton Rubber Co. for $8929.93, making a total of secured liabilities of between $35,000 and $36,000. The stock was valued at about $12,000 over and above certain goods which were consigned, and the accounts were put at $12,000. An interesting feature of the failure is the fact that the house was established by Gen. J. R. Lewis, at present postmaster at Atlanta, about eight years ago. The concern was apparently prosperous until General Lewis was appointed postmaster by President Harrison. Public feeling was aroused against Gen. Lewis because of his policy in appointing certain negroes, and he was burned in effigy. It was then that he severed his connection with the rubber company, withdrawing entirely. After his retirement the concern was not a paying venture, and the failure was predicted for some time.

Other claims against the company were held by I. B. Williams & Sons, Dover, N. H., goods amounting to $3800; by the Eureka Fire Hose Co., goods amounting to about $125; by the Goody Belting Co., of Baltimore, goods amounting to $800. The unsecured creditors made a motion to have a receiver appointed, but this was denied by the court. The assets will not be sufficient to pay the secured creditors.

A Good Year at Racine.

THE annual meeting of the Chicago Rubber Clothing Co. was held at Racine, Wis., in the rooms of the Racine Business Men's Association, on Saturday afternoon, January 16. The old Board of Directors was unanimously elected, the Secretary being authorized to cast the vote of the stockholders for that purpose. At a subsequent meeting of the directors the old officers of the company were re-elected.

The surplus earnings of the past two years, amounting to $40,000, were capitalized and a 6 per cent. dividend in cash was ordered, payable on February 1. The capital stock of the company was increased $75,000 by a unanimous vote of the stockholders, making the total capital $175,000.

Respecting the business of the company for the past year Manager George H. Laughton advises THE INDIA RUBBER WORLD: "The business has been an exceedingly prosperous one, being much larger than the year previous which was our banner year up to that time."

Rubber-Goods Exports From New York.

THE declared value of exports from New York during the four weeks ending January 26, 1892, under the general heading "India-Rubber Goods," according to the Collector of the Port, is given below. The number of packages shipped to each country is given as showing the possible wide distribution of the goods exported. It may be mentioned that 53 per cent. of all our exports of rubber goods go through the port of New York. The figures follow:

To—	Packages.	Value.	To—	Packages.	Value.
Amsterdam	1	$77	Gijon	1	$ 8
Antwerp	9	2,264	Glasgow	3	600
Berlin	6	469	Hamburg	74	3,419
Bolton	9	58	Havre	111	12,052
Brazil	6	445	Hayti	9	177
Bremen	6	1,140	Liverpool	6	405
British Africa	5	210	London	71	2,445
British Australia	21	1,260	Marseilles	4	1,003
British Honduras	1	4	Mexico	23	1,610
British West Indies	12	183	Newfoundland	12	200
Central America	8	283	New Zealand	2	23
Chili	11	606	Peru	2	87
Christiania	4	146	Porto Rico	6	72
Colombia	13	727	Rotterdam	9	1,950
Copenhagen	12	720	San Domingo	2	30
Cuba	24	1,710	St. Gall	22	325
Danish West Indies	1	70	Venezuela	13	419
Dutch East Indies	1	19			
Dutch West Indies	5	75	Total	528	$35,380
Ecuador	3	108			

The amount of crude India rubber exported during the same time from the port of New York is thus stated:

To—	Packages.	Value.	To—	Packages.	Value.
Antwerp	4	$650	Liverpool	106	$31,975
Barcelona	1	146	London	52	2,875
Hamburg	41	400			
Havre	168	2,792	Total	541	$72,228
Hull	169	33,400			

India-rubber scrap was exported to Glasgow to the value of $3667 and India-rubber waste to Havre amounting to $978 in value. It may be mentioned that among exports of goods containing more or less rubber were wringers valued at $3125.

TRADE AND PERSONAL NOTES.

THE Boston Rubber Shoe Co. have made an application to the Legislature of Massachusetts, through ex-Governor John D. Long, for a special act permitting the increase of its capital stock from $1,000,000 to $5,000,000. Under the laws of the State a corporation is not permitted, without special permission, to have a larger capital than the sum first named. Mr. Long told the Legislature that while this was the largest concern of its kind in the world in point of product, it was one of the smallest in respect to its capital stock. Mr. Long urged that this privilege was not asked for any possible speculative purposes whatever, but that it was only that the company might have the rating which it deserves, and that it may be able to stand before the world in its true magnitude. As proof of the remarkably rapid and successful growth of this concern, it is only necessary to state that it began business in 1853 with a capital of but $75,000. The Committee on Mercantile Affairs, to which the company's petition was referred, has reported favorably on the document, which in reality amounts to a grant of the legislation asked for. The consideration of the matter gave the lawmakers a chance to denounce the "rubber trust"—whatever that may be—and also to ask whether this increase of capital was desired to enable the company to buy the Pará company's plant at South Framingham.

—A dispatch from Chicago says that William S. Houghton and George D. Clapp, surviving partners of the firm of Houghton, Coolidge & Co., and the Pará Rubber Shoe Co. have had a misunderstanding with their former western agent, Edwin P. Jaquith, and that Jaquith has been sued in the United States Circuit Court for an accounting. Houghton, Coolidge & Co. were the agents of the Pará company, and in September, 1890, Jaquith took charge of a western headquarters in Chicago. Large amounts of rubber goods were sent to him, it is claimed, and the amount now due from him at reasonable prices for the goods is $158,511.56. Now, the bill says, Jaquith is endeavoring to circumvent the complainants in the collection of this amount, and has refused to render any true account of the disposition of the merchandise received by him, or to turn over to his employers the amount due from him. He also, complainants say, makes charges of offsets and countercharges which are unfounded.

—Soon after the first of the year the Boston Woven Hose and Rubber Co. moved from their Devonshire street quarters to a larger and more convenient store. The ground floor is 125 by 60 feet in dimensions. On the Devonshire street side are ten fifteen-foot windows that let a flood of light into the apartment. On the Winthrop Square side—for the store is on the corner—are three more of these large windows. There are two entrances, one at No. 275 Devonshire street and one at No. 5 Winthrop Square. On the Devonshire street side the store has five offices partitioned off in the following order: First—for salesmen and confidential clerk; second—president and general manager; third—for order clerk; fourth—for book-keepers, and fifth—for the receiving clerk. Opposite to these is a department, also hedged in by partitions, for fire-supplies, of which a full line is there displayed. Below this main floor is one of the lightest and most airy basements any store could wish to have. It is in dimensions 125 by 75 feet and is studded with half-length windows on two of its sides. Here of course is carried the bulk of the stock of mechanical goods and the place is in every way fitted for their storage and for easy access and shipment. The whole store and basement are lighted by electric lights and are fitted with every convenience for comfort and for business. The store force consists of twenty-five individuals, numbers of whom are the responsible heads of departments.

—G. F. Covell, formerly of the Atlanta Rubber Co., Atlanta, Ga., is representing the Globe Rubber Co. of Trenton, N. J., in the West.

—Francis Grauert, well known in New York, where he has resided for a long time, has taken a responsible position with Norton & Co. at Pará. Mr. Grauert has the reputation of being a very able rubber-man, and his former residence in Brazil eminently qualifies him for the position he holds in his new home.

—H. S. Randall, of the Boston Rubber Shoe Co., is on a visit to Lakewood, N. J. He is fairly restored to health and expects soon to be able to resume his duties.

—Edward W. Hoyt, of the United States Rubber Works, Brooklyn, N. Y., advises THE INDIA RUBBER WORLD that he has taken a lease on the fine double-front store, No. 4 West Fourteenth street, near Fifth Avenue, New York, from May 1, which he hopes to make *the* retail rubber store of the city.

—The office of THE INDIA RUBBER WORLD is graced by a picture of a beautiful woman, under which is the name "Isabella," which is the latest of the striking "inspirations" of the busy and ever original advertising department of the B. F. Goodrich Co., Akron, Ohio. In a neatly-printed circular to the trade the advertisers say, respecting this work of art: "If it serves, even remotely, to develop or to strengthen a friendly feeling and inspires a determination to enlarge your relations with us, it will fully accomplish its mission."

—The Boston Woven Hose and Rubber Co. have purchased the Cambridge Rolling Mills property which adjoins their factory. They now own both banks at the head of the old canal on which their factory is located, and in the spring a most decided and elaborate extension of their plant will be commenced. First will come the filling in of a tract of land measuring 150 by 85 feet and then up will go a mammoth new building. The old building will not by any means be discarded or torn down, but the new one will in every respect be an addition. Just what the dimensions of this will be has not yet been decided upon. The present buildings comprising the plant will be remodeled and an extensive line of new machinery of the most modern pattern put in. Work in a small way will be begun at once but it will be at least two months before the big force which it is proposed to put on will be set at work on the addition and improvements. The plans for the work will have to be finished first and as yet it has not been decided what they will be.

—The family of William Morse, of the American Rubber Co., were made happy on January 20 by the arrival of a little daughter, who tipped the scales at seven pounds.

—R. D. Evans, of the American Rubber Co., whose name is synonymous with that of the captain of the *Yorktown* at Valparaiso, has been on a visit to New York. Business seems to be in excellent shape with this company, new employés being constantly added to the New York store. Herbert E. Bill, formerly of the Metropolitan Rubber Co., is one of the new arrivals. E. H. Paine has been on an extended trip in the West. Large sales of the New England sole tennis shoes are reported.

—Frank Bell, secretary of the new concern at Chattanooga, Tenn., known as The Southern Rubber Manufacturing Co., is distributing handsome prospectuses of the company, estimated by local newspapers to have cost $2000 at the printer's.

—The Home Rubber Co., of Trenton, N. J., have so enlarged their plant that their hose capacity is now 20,000 feet a day.

—The Florence Zinc Co. are a new concern whose manufactory is located at Freemansburg, Pa. They make white oxid of zinc by the processes used in Europe, and the product is said to be an improvement even over the French zinc. The S. P. Wetherell Co., of Philadelphia, are the selling agents.

—The Mercer Rubber Co. at Trenton, N. J., are putting in an apparatus for lighting their works with electricity.

—The Derby Rubber Co., of Huntington, Conn., have increased their capital from $40,000 to $50,000, by the issue of 400 new shares of $25 each, which have been paid up in cash.

—The Morrisville (Pa.) rubber works have been started up.

—There is a report that the Massachusetts Rubber Co., of Reading, Mass., may resume business. The committee chosen to investigate the affairs of the company and of C. W. Hatch, the manager, who owns most of the stock, have reported to the creditors that the only assets of the corporation, free of incumbrance, consist of ordinary mill supplies, worth about $12,000. The mill plant is mortgaged for $10,000. On these items something might be realized for the creditors after long litigation, but not enough to pay 10 per cent. on the claims. Mr. Hatch has friends, however, who have made an offer on the corporation indebtedness of 20 per cent. and on his individual debts of 10 per cent., payable in cash within ten days of acceptance, and it is thought that these offers will be accepted.

—Chicago is said to have twenty-nine rubber stores, thirty rubber-stamp works, five chewing-gum factories, and ten druggist-sundries houses.

—Mr. William A. Thornton succeeds Mr. Vinal as manager of the works of George Cruickshank in Providence, R. I. The firm will continue to make a specialty of molds, tubing machines, band cutters, etc., for rubber manufacturers.

—The Garlock Packing Co. of Palmyra, N. Y., have 25 travelling salesmen on the road.

—Mr. J. O. Stokes, treasurer of the Home Rubber Co., of Trenton, N. J., took a few days' vacation to attend to an interesting case of the "grip." He is, however, out again and attending to business with his usual quiet energy.

—Mr. Randolph Brandt, selling agent of the Selden Packings, has lately booked some very neat orders for export.

—Mr. D. B. Martin, secretary and treasurer of the Ideal Rubber Co. of Brooklyn, N. Y., has resigned his position and gone with the Seamless Rubber Co., of New Haven, Conn., to take full charge of their sale department.

—The Ideal Rubber Co., of Brooklyn, have elected the following officers: Anton C. Eggers, president; James P. Heffernan, vice-president; James S. Simpson, treasurer. The two last named gentlemen are new to the rubber business, Mr. Heffernan being a partner in the paper house of Heffernan & Rossman, of New York, and Mr. Simpson one of the heirs of the great Simpson estate that includes many business blocks and factories in Brooklyn.

—Mr. J. P. Lyons, of Boston, Mass., who has done some excellent work for THE INDIA RUBBER WORLD, is the "funny man" on the new comic paper published in Boston, the *Jester*.

—The Arctic lock manufactured by John H. Parker, of Boston, is selling this year far ahead of last season's orders, which, by the way, were far from small.

—The Almy Water Tube Boiler Co., of Providence, R. I., are putting two boilers of 100 horse-power each in the Farlow Building, Chicago.

—Mr. J. B. Romaine, of Rochelle Park, N. J., is so firm a believer in the efficacy of metal rings as a cure for rheumatism that he put one on a valuable horse that he owns and the creature recovered.

—The F. J. Kaldenberg Co. have added some fine offices to their manufacturing plant on Thirty-third street, New York. The company are adding largely to their line of rubber goods, their output being in the mechanical-goods line.

—Mr. Samuel K. Randolph, president of the Commonwealth Rubber Co., of New York, has just returned from a Western trip.

—The Erie Rubber Co., who have had under consideration the advisability of putting in an electric-light plant with 100 lamps, have postponed it for a year, when they hope to enlarge the space occupied by them.

—The factories of the Boston Rubber Shoe Co. are now running with a full force of workmen. For the past five years the new year has started with the workmen on three-quarter time. The business of the company this year is something unusual. Twenty-seven hundred operatives are now employed at the Fells and Edgeworth works.

—The death is announced of James C. Salisbury, of Bristol, R. I., long in the employ of the National India-Rubber Co., in the annex office of Superintendent Williams. His age was thirty-eight years.

—Fire in Baltimore on January 16 damaged the stock of George P. Thomas, Jr., dealer in Goodyear's rubber goods, at Charles and Baltimore streets, to the extent of $2000.

—At a special meeting of the stockholders of the Pará Rubber Shoe Co. at Boston, Mass., on January 15, a committee was appointed to see the plant at South Framingham.

—Out-of-town parties are said to be negotiating with capitalists at Taunton, Mass., to establish a rubber factory there to cost $40,000.

—The National India-Rubber Co., Providence, have commenced to make lawn tennis goods. This work will carry them well into the summer.

—Colonel Aaron S. Taft, of the Worcester Rubber Co., was one of the guests at the Old Guard Ball in New York on January 21.

—Fire in New York on January 26 damaged the stock of Robert H. Ingersoll, manufacturer of rubber stamps at No. 65 Cortlandt street, to the extent of $3500.

—The census figures in regard to the boot and shoe trade remain unfinished on account of an exhaustion in the appropriations, with considerable doubt as to when the work can be again taken up.

—Western buyers of rubber goods are a little scarce in Eastern cities this season. It is believed that they will not much longer delay their accustomed visits.

—Some shoe-men have adopted the practice of employing men to attract a crowd to their show-windows. The plan is to get two demonstrative individuals to point to some article, and it seems to be a trait of human nature for others to stop and see what is so interesting. Naturally a crowd gathers which grows as a snowball, and then the individuals depart only to return in about fifteen minutes and repeat the operation. This has gotten to be something of a science—so much so that the operators generally have two or more stores to work on consecutively, for which they are well paid.

—There has been some very deep snow in New York State and dealers have sold a great many goods, but they complain that they have made very little money, margins are so close.

—The Boston Woven Hose Co., who lately moved into their new store in Winthrop Square, Boston, are having a big trade in fire-department supplies.

—D. H. Smith, of the Bedford Rubber Co., Brooklyn, N. Y., who has been away for some time, has again gone on an extended trip throughout the West. A. P. Stevens and Mr. Smith, who form the company, are pushing young men, and are doing a good business in clothing and mackintoshes.

—Henry F. Knowles, who is connected with the Globe Rubber Co., which lately opened at No. 49 Federal street, Boston, is doing a nice business in hose. The company are carrying a full line of mechanical goods. Mr. Knowles is one of the best known men in the mechanical goods business in the East, and in the smaller cities and towns in Massachusetts, Rhode Island and Connecticut he has a full regiment of devoted friends.

—George E. Austin, who started the Imperial Rubber Co. in New York four months ago, has lately had it incorporated under the laws of New Jersey with a capital of $25,000. The business of the company has increased largely and now they are looking for more spacious quarters. The company employ four salesmen and lately have beensuccessful in obtaining four contracts of good size for three-quarter inch hose.

—Dealers who pride themselves on selling a good rubber shoe and getting a fair price for it do not look kindly on the sale made of rubbers in Lynn, Mass., at 16½ cents and in Reade street, New York, for 18 cents. The sale has a smack of bankruptcy or "fool" rubber.

—It is estimated that in New York State there are 3792 retailers of shoes; in Massachusetts, 1143; in Wisconsin, 1288; in Pennsylvania, 3579; in Ohio, 2024; in Missouri, 1002; in Kentucky, 446; in Illinois, 1948; in Georgia, 630; in California, 432, and in Alabama, 439.

—One hundred and thirty-six thousand square feet of three-ply Gutta-percha roofing will be shipped to Tallapoosa, Ga., by the Empire Roofing Co., No. 111 North Fourth street, Philadelphia, at an early date. It has been contracted for by the following new Tallapoosa customers: The Howe Ventilating Stove Co., 50,000 feet; Hitchcock, May & Co., 60,000 feet, and the Hayes Chair Co., 26,000 feet. The company publish an excellent catalogue of roofing material which will be mailed on application.

—Steam-pipes have been made recently of ramie fiber, or China grass, hardened under tremendous hydraulic pressure, and possessing a tensile strength equal to two-and-one-half times that of steel. China grass is unaffected by moisture, will not shrink nor swell, is a non-conductor of heat, and it cannot rust.

—In a new bicycle tire the wheels, instead of being fitted with pneumatic or cushion tires, have the grooves fitted with complete cycles of balls, which revolve on pivots fixed in the groove of the wheels. These balls bite the ground, and the machine travels up and down hill with wonderful celerity.

—A new roofing paper is made by applying to the paper a composition of boiled linseed oil and pulverized charcoal. The paper so prepared is said to be perfectly air proof and waterproof under all circumstances.

INDIVIDUAL MENTION.

MR. A. R. TROTTER, formerly general agent of the National Rubber Co., is now residing in Providence, R. I. His many friends will be sorry to know that he is quite ill with inflammatory rheumatism.

—President H. H. Tyer, of the Tyer Rubber Co., has been very ill with the "grip" with typhoid symptoms. He is improving slowly.

—Mr. H. G. Rice, of the Standard Thermometer Co., Peabody, Mass., has had his share of the "grip," but is out again and attending to business.

—Mr. Henry J. Williams, whose interesting articles on Rubber Ingredients and Adulterants in THE INDIA RUBBER WORLD are attracting attention, is something of an expert on aluminum, having spent some time in Pittsburgh at the plant where so much of that metal is now turned out.

ON THE ROAD.

EUGENE HERBERT, of the Atlas Rubber Co., left New York on January 27 for an extended business trip throughout the West.

—B. C. Foster, of the Rubber Specialty Manufacturing Co., New York, is on a trip to Chicago.

—Mr. T. H. Harney, of the Tyer Rubber Co., is on his way to the Pacific Coast and making excellent sales of the Tyrian goods.

—Mr. J. W. Kneupfer, who travels for the Commonwealth Rubber Co., of New York, has built up for himself an excellent trade in New York City, Jersey City and Brooklyn

—Mr. I. W. Dodge, of the Standard Thermometer Co., is travelling through New England on a brief business trip.

—F. Phelan, who was lately with the Metropolitan Rubber Co., and since January 1 with the F. J. Kaldenberg Rubber Co., of New York, has lately made a trip to Boston, doing a nice trade in hose and pure gum goods.

—G. B. Widner, of the American Rubber Co., has returned from a trip through Pennsylvania. He reports a surprising demand for tennis goods.

—Walter M. Farwell, formerly with C. S. Knowles, of Boston, Mass., is travelling in the New England States for the Trenton Rubber Co.

TRADE PUBLICATIONS.

THE New Jersey Car Spring and Rubber Co. (Jersey City, N. J.) issue a new price-list of hose, belting, mats, packing, springs, gaskets and other goods adapted to mechanical purposes. A separate illustrated catalogue of 36 pages is issued by this firm, devoted to descriptions and prices of perforated mats, plain and corrugated.

—Henry F. Knowles, New England agent at No. 49 Federal street, Boston, for the Globe Rubber Works (Trenton, N. J.), has issued a neat little catalogue and price-list of railroad rubber goods and other mechanical rubber appliances.

—The Annual Price-List of Whitall, Tatum & Co. (Nos. 46–48 Barclay street, New York, and Philadelphia and Boston) contains 204 large pages devoted mainly to Druggists' Sundries. The number of items in this catalogue involving the use of rubber is very large, including nursing-bottles and fittings, nipples, teething-pads, breast-pumps, nipple-shields, syringes in great variety, douches, inhalers, powder-insufflators, atomizers, pipettes, water-bottles, finger-cots, invalid cushions, ice-bags, surgeon's bandages, catheters, pessaries, cupping glasses, siphon irrigators, thermometer-cases, sponge bags, hard-rubber spatulas, tablet molds, rubber stoppers, rubber combs and elastic bands.

—The American Rubber Co. (Boston, New York, etc.) issue a neat catalogue of Fine Waterproof Clothing, giving colored plates of garments for men and women, including firemen's and policemen's goods; also horse covers and dash aprons for vehicles.

—The Stephen Ballard Rubber Co. (No. 123 Chambers street, New York) send out each month a neat little blotting-pad, bearing upon its face a calendar for the month, which proves a convenience for the rubber-man's desk. Incidentally it advertises in an unobtrusive manner the belting and hose manufactured by the company.

REVIEW OF THE RUBBER MARKET.

THE market for crude rubber during the past thirty days has been of a very steady character, the fluctuations being narrow in range and significant only of a demand which is very well balanced by a liberal supply. The receipts at New York were very large in December—never equaled before in any one month in the history of the rubber trade—but in January there were also large arrivals which have in addition been taken care of and which by no manner of means are pressing in any undue way upon the market. Prices within thirty days have been as low as 62½ cents, and a single sale of 30,000 pounds of old rubber has been made as high as 71 cents, though this price hardly represents the maximum during the period in question. The situation seems to be that the manufacturers at present prices are absorbing the heavy receipts and are making money. Should there be a moderate decline in the price, it is believed with good reason that they would come in and buy largely and thus restore at once quotations to a level equal to the present.

This position of the market doubtless will remain for some time, and while it does steady prices may be expected to prevail. During the past year it is estimated that consumption all over the world increased 12½ per cent., which was hardly met by the estimated increase in the production of 10 per cent. Europe just now is buying largely, and some exports from the Atlantic Coast have been made to those countries. In Africans the trade has been moderate, compared with the average of other years at this season. Centrals have been in light supply and freely absorbed.

The arrivals of Pará at New York during the past thirty days have been as follows:

	Pará.	Caucho.
January 25—By the *Augustine*	417 tons	.... ..
February 1—By the *Clement*	270 tons	40 tons
February 7—By the *Lisbonense*	440 tons	20 tons
Total	1127 tons	60 tons

Afloat are the *Vigilanza*, with 150 tons; the *Gregory*, 280 tons, and the *Advance*, with 90 tons.

The whole visible supply of Pará rubber on February 1, with comparisons for January 1, is estimated as follows:

	January 12, 1892.	February 1, 1892.
United States	778 tons.	748 tons.
England	485 tons.	1074 tons.
Pará	1345 tons.	1650 tons.
Afloat to United States	390 tons.	920 tons.
Afloat to England	540 tons.	400 tons.
Total	3538 tons.	4842 tons.

In addition to the stock of Pará in New York there are 20,000 pounds of Caucho, 600,000 pounds of Africans and 250,000 pounds of Centrals. One year ago the visible supply of rubber in the markets of the world and localities enumerated above was 3284 tons, the increase being divided fairly among the different places. Deliveries during January footed up 1282 tons against 1550 tons for the corresponding month last year. Of these deliveries United States took 757 tons against 875 tons last year and Europe took 525 tons against 675 tons in January, 1891. The receipts for February last year were 2300 tons and this month they are predicted to be only 1700 tons.

The statistical position of Pará rubber in New York is thus reported for January, 1892, as compared with the same month in preceding years:

Stock of Pará here,	December 31, 1891,	about	1,300,000 pounds.
Receipts,	January,	"	1,984.000 pounds.
Deliveries,	January,	"	1,534.000 pounds.
Stock,	January 30, 1892,	"	1,750.000 pounds.
Stock,	January 30, 1891,	"	1,150.000 pounds.
Stock,	January 30, 1890,	"	1,280.000 pounds.

Prices for January.

	1892.		1891.		1890.	
	Fine.	Coarse.	Fine.	Coarse.	Fine.	Coarse
First	63	43	77	55	73	55
Highest	65	45	87	61	73	55
Lowest	63	43	75	52	68	47
Last	63½	44	87	61	68	47

[The cargo of Steamer *Clement*, which arrived late in January, about 600,000 pounds, will be included in February report, as most of it will be delivered, and therefore it should not be counted as stock on hand.]

At Pará the season as it progresses may prove a speculative one. There is little confidence in the stability of the Brazilian government, but so far it is not known that Pará or Amazonas have taken any active revolutionary steps. The course of exchange on London in Brazil seems to be serious, being down as low as 12*d.*, and has affected the coffee markets very seriously. Pará exchange on London generally rules 1/16*d.* higher, but within the past few days it has ruled at 12½ *d.* Telegraph communication may be cut off at any moment if recent insurrectionary movements be confirmed.

The receipts at Pará during January were 2820 tons against 1620 tons for the same time one year ago. So far this month they have been 380 tons, and it is thought that will be small for the remainder of February.

Late cables give the price of Upriver at 4250 reis, and 4000 for Islands. In London the price of fine Pará as reported by cable at 2*s.* 9½*d.* Quotations for other sorts by mail are as follows:

Gambia	1s. 2 d.	@	2s. 3 d.
Sierra Leone Niggers	11¼d.	@	1s. 9 d.
Thimbles	1s. 8½d.	@	1s. 9 d.
Accra	1s. 1 d.	@	1s. 10½d.
Congo Ball	1s. 7 d.	@	1s. 8 d.
Tongues	1s. 3 d.	@	1s. 6 d.
Salt Pond	1s. 0½d.	@	1s. 3½d.
Liberian	1s. 0 d.	@	1s. 3 d.
Lumps and flakes			1s. 9 d.
Calabar	1s. 1 d.	@	1s. 9 d.

Prices show a slight decline when compared with those of one year ago.

The latest New York quotations are:

Pará, fine, new	64-65	Sierra Leone	26-43
Pará, fine, old	68-70	Benguela	47-48
Pará, coarse, new	44-48	Congo Ball	38-41
Pará, coarse, old	48-50	Small Ball	———
Caucho (Peruvian) strip	45-44½	Flake, Lump and Ord	25-27
Caucho (Peruvian) ball	51-52	Mozambique, red ball	
Mangabeira, sheet	37-38	Mozambique, white ball	
Esmeralda, sausage	47-49	Madagascar, pinky	51-52
Guayaquil, strip	36-39	Madagascar, black	35-42
Nicaragua, scrap	46-48	Borneo	30-43
Nicaragua, sheet	44-46	Gutta-percha, fine grade	175
Guatemala, sheet	40-45	Gutta-percha, medium	110
Thimbles	41-42	Gutta-percha, hard white	110
Tongues	36-38	Gutta-percha, lower sorts	nominal

In regard to the financial situation Messrs. Simpson & Beers, brokers in crude India-rubber and commercial paper, New York, report: "During January money ruled phenomenally easy, first-class single-name rubber notes having been sold at 5 per cent. for three to six months paper. Now the notable feature in this grade is its scarcity. The paper of rubber companies of small capital and not generally known to the buyers would rule from 6½ to 8 per cent. Our bank reserves are larger than for several years, and the money tendency still favors New York."

In mechanical goods, dealers report a handsome business, with excellent prospects for the coming season. Some concerns have been working day and night for a long time so as to catch up with orders. Dealers are placing orders for hose for April delivery. In packing and belting the business continues excellent. Although the coming fruit season is many months away, dealers are not unmindful of the difficulty in obtaining goods last year and are giving some attention to the needs of this. A traveller in the East on a short trip had no difficulty in selling ten barrels of these goods. The demand for steam and air-brake hose is up to the usual volume. An association of railroad men at a late annual meeting passed resolutions looking to the compelling of railroad companies to adopt air-brakes for freight trains. Many of the trunk lines have adopted this system already, and one of the Pacific lines will not receive from its connections a car which is not equipped in this manner. The scarcity of motive power in hauling the great amount of wheat and corn now en route for Europe both by the Atlantic and New Orleans routes calls for higher speed of trains than in any previous year, and the only feasible plan is to have long trains under control of the engineer which can only be done by the air-brake system. In steam-heating for passenger trains the demand is expected now soon to cease, as the spring is close at hand, but the trade has been excellent in all directions.

The boot-and-shoe trade has been, within the past week, of a disappointing character. The winter opened in the Northwest with a blizzard and good sales were made, and for some time within the past few weeks the whole country was covered with snow, but mild weather seems to be the rule now and there is reported to be no snow on the ground except in New York State. Stocks in the interior, however, are reported light and the demand would be good should the occasion for a replenishment occur. Some very heavy sales of "thirds" have taken place at what would seem absurdly low prices, but this class of goods can be made very cheaply and when the transactions are large a living profit is realized. The scarcity of warm goods continues and probably will not be met this season. Prices for all goods are low, and one large company is giving a discount of 50 & 10 & 2. The stereotyped discount of 45 & 5 & 10 is hardly maintained. The trade in the South has been a poor one and while there has been some activity in Philadelphia, yet the volume is noticeably smaller than usual at this season of the year and salesmen in some cases have been withdrawn. In the West business is fairly good. Reports from Cincinnati and Chicago show the trade to be in an average condition. Some large auction sales are about to take place in New York, representing new goods as well as some damaged by water. Shoemen who a month ago were full of hope now add this to the three past winters as being of an indifferent character. A great business is expected in tennis goods and large orders are being received. Travellers are out with samples in every direction and the good reports do not vary.

The business in clothing is hardly up to the average at this season, the weather being against trade. In druggists'-sundries travellers are out and very fair reports are received from the West. In hard-rubber lines the business has not been beyond an average one. Insulated-wire men are expecting a good season as building will be large all over the country. In webbing, business is hardly up to the average and this can be said of miscellaneous articles. Collections throughout the country are only fair. In this respect the rubber business seems to be in a better condition than other lines and making the same comparison it is more healthy in other details.

Fire-hose is in good demand, and some manufacturers are taking good-sized contracts.

The demand for crude rubber is coming principally from mechanical goods men, bicycle-men taking also large quantities.

In rubber-manufacturers' requirements litharge is remarkably steady; oxid of zinc is well sold up, and there is an impression that linseed oil will soon advance. A revision in the price of colors has taken place.

* * *

Messrs. Earle Brothers, of New York, have favored THE INDIA RUBBER WORLD with a statement of monthly importations of India-rubber into the United States for the six years ending December 31, 1891, in pounds, with the highest and lowest prices in each month. The following table shows the increase or decrease in the imports of the various grades between 1886 and 1891, by pounds:

	1886.	1891.
Fine Pará	12,534,000	16,919,000
Coarse Pará	5,458,000	6,537,000
Central America	6,661,000	5,558,000
East India and Africa	4,698,000	7,166,000
Total	29,351,000	36,180,000

The lowest price quoted for fine Pará was 60 cents per pound in January, 1886; August, 1889, and September, 1891. The highest price quoted was $1 in September, 1890; 95 cents was reached in April, 1891, and August, 1890.

In a table of the consumption of India-rubber by the United States and Canadas, the deliveries to manufacturers are reported to have increased from 9,903,000 pounds in 1876 to 34,367,000 pounds in 1891.

Another table shows that the total exports from Pará have increased from 7,846,000 pounds in 1864 to 39,200,000 pounds in 1891.

Messrs. Simpson & Beers of New York have favored us with a sheet of statistics of Pará rubber, showing the stocks in New York at the end of each month for five years past, and also the highest and lowest prices during each month.

* * *

Messrs. Challenor & Co., Liverpool, report to THE INDIA RUBBER WORLD, January 28, respecting African rubber: "We have to report a steady market, with not much business passing, and values are unchanged. At our auctions held on the 26th inst., about 75 tons were offered, for which there was better competition than usual, and about 12 tons sold, including Sierra Leone Twists at 1s. 9d.; and prime Niggers at 1s. 8d.; about 6 tons Cameroons at 1s. 6½d. to 1s. 7¼d., according to quality; Tongue at 1s. 5d. to 1s. 5½d.; Thimbles at 1s. 5d.; Old Calabar at 1s. 2d. to 1s. 2¼d. for ordinary, and 1s. 7½d. to 1s. 8d. for Niggers; Assinee and Grand Bassam at 1s. 3¼d.; and ordinary Cape Coast and Saltpond sorts at 1s. 1d. to 1s. 1⅝d. per pound. At and since the auctions, about 70 tons have been sold this week at steady prices."

W. BEILBY, of Roundhay Park, near Leeds, England, has brought out a neat perforated tire. The tire is 1¼ inches in diameter, perforated with 3-inch holes, 5-16-inch apart, the holes going through the tires at right angles to its length, and central to its bulk. The yield, therefore, gives way in a direction at right angles to that in which the ordinary cushion acts, and the inventor states that it has as much elasticity as the best cushion, and cannot be cut by the rim, as the pressure is longways, and not in such a direction as to force the sides of the tire over the edges of the rim. The tire is fastened on with cement in the ordinary way, and it possesses an advantage to the tourist in that should it come loose it can be easily laced on to the rim through the holes.

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THE new store of the Stoughton Rubber Co., No. 44 Summer street, Boston, is very handsome, and is fitted with every convenience for displaying their goods. As it faces Chauncey street, there is no shadow thrown by buildings on the opposite side, as is the case with many Boston stores, and the great plate-glass windows let in a flood of light. Entering the store on the left, one sees fourteen double-decked racks where hang a great variety of ladies' mackintoshes, while on tables in the middle of the room are the men's mackintoshes. At the right side of the store is the rubber-shoe department whose upholstered seats and soft carpets tempt the ladies to spend sufficient time to get well fitted with rubber shoes. In the rear are the offices with a private sanctum for the general manager. On the floor below is carried the stock of mechanical goods that the Stoughton company handle and which is at all times very large. The rooms throughout are lighted with electric lights, and the whole establishment is pleasant, convenient and excellently situated for business.

J. A. DRIFFIL, President. ARCHIE THOMPSON, Secretary.

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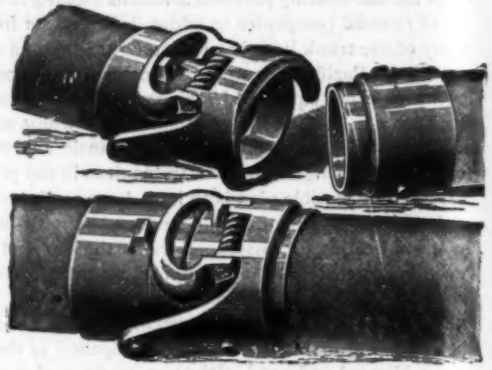

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P.O. Box 65, POMONA, CAL.

Free Want Department.

WANTED—A thoroughly competent mat perforator for a large factory in the vicinity of New York. Must be a skillful man in his business and able to design. Address, D. I. K., INDIA RUBBER WORLD OFFICE. (Jan.)

WANTED—Rubber Goods Salesman, one who is familiar with the general line and who has had experience on the road. State qualifications and full particulars. Western Manufacturer, care INDIA RUBBER WORLD.

WANTED—A Salesman, by one of the leading manufacturing firms, to sell Mechanical Rubber Goods on the road. Address, giving full particulars as to experience, references, etc., S. D., care INDIA RUBBER WORLD, N. Y.

WANTED—A rubber mat-pincher, one who can lay out mats and pinch at sight. Address, Mats, care INDIA RUBBER WORLD.

WANTED—A good salesman to travel in the Northwest. One with experience in mechanical rubber goods, leather belting, etc., and one who has had some experience on the road. Address, Northwest, INDIA RUBBER WORLD OFFICE. (Jan.)

WANTED—January 1, 1892, a position as traveling salesman for manufacturer to sell belting, hose and mechanical rubber goods by a reliable man, with the best of references. Address Reliable, INDIA RUBBER WORLD. (Dec.)

WANTED—A thoroughly equipped calender man. One who has knowledge of compounding coating and curing rubber fabrics preferred. State experience and give references. Address, W. O. B., INDIA RUBBER WORLD Office. (Dec.)

WANTED—Position as foreman or to superintend the manufacture of mechanical rubber goods by a practical man of long experience. Best of references given. Address X. Y. Z., INDIA RUBBER WORLD office. (Dec.)

WANTED—Position as foreman in mackintosh factory by a practical cutter and maker. Have patterns of all English and American styles. Address, R. M. L., INDIA RUBBER WORLD.

WANTED—A man who thoroughly understands the manufacture of pneumatic tires for bicycles. Address, Immediate, 192 World Building, New York.

SALESMAN—A man, experienced, and with large acquaintance in mechanical rubber, mill and fire department trade, desires a position representing a first-class manufacturing company. Address Chicago Salesman, INDIA RUBBER WORLD Office. (Dec.)

WANTED—Waste rubber, gutta-percha, and old cable of every description. Will buy any quantity. Send samples and lowest quotations to V. Chantard & Christensen, Billiter Buildings, London, E. C

WANTED—A small vulcanizing press, also a heater about 26" x 3' or 3' x 4' Would also buy tennis ball or bulb molds if in good condition. Address, with full particulars and price, H. W., INDIA RUBBER WORLD Office. (Dec.)

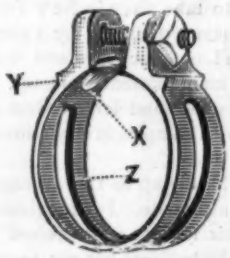
WANTED—A position as traveling salesman for a rubber house. Have had seven years experience on the road but not with rubber goods. Good references. Address, S. T. Palmer, West Walworth, N. Y. (Dec.)

PARTNER WANTED—An energetic young man of good habits, business experience, and with some means, who is acquainted with rubber goods in mechanicals, clothing, and boot and shoe lines, and who has had experience n tithe road. Can find a good opening by addressing at once and giving particulars. West Virginia, care INDIA RUBBER WORLD. (Dec.)

WANTED—A position as superintendent of mill room and compound room by an experienced worker. Address, N. A., INDIA RUBBER WORLD Office.

WANTED—Foreman in gossamer spreading room. Address, stating experience, and wages expected, to M. A. F., care of INDIA RUBBER WORLD.

WANTED—Two girls thoroughly experienced in making all kinds of soft rubber goods. Address, E. W. Holt, 83 Broadway, New York.



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THE CHEMISTRY OF RUBBER INGREDIENTS AND ADULTERANTS.

*By Henry J. Williams, Chemist.**

II.—ZINC OXIDE OR ZINC WHITE.

AMONG the many articles which are employed for mixing with India-rubber in the preparation of white rubber goods, zinc oxide, or as it commonly called in trade "zinc white," plays a most important part, for it possesses qualities which are found in no other white material which is now added to rubber. For instance, a thin sheet of India-rubber, made from equal parts of gum and whiting, will be more or less transparent, but if zinc oxide is substituted for the whiting the sheet will be perfectly opaque. The chief excellence of zinc white when compounded with rubber lies in its brilliant luster, its clean appearance, its excellent wearing qualities and its freedom from discoloration when exposed to sulphuretted hydrogen vapors. This property of retaining the white color makes it valuable as a permanent white paint. In France, by order of the Government, all white-lead paints are excluded from hospitals and zinc white substituted. This is done because it is claimed that when the oil has dried fine particles of the poisonous white-lead detach themselves from the walls and float in the air. If we look into some of the chemical reactions which occur when rubber and zinc oxide are combined and when vulcanizing takes place, we at once see why this material is so well adapted for making white vulcanized rubber goods.

The vulcanizing process, as is well known, consists in heating the rubber, mixed with a certain percentage of sulphur or metallic sulphides, for several hours at a temperature lying between 250° and 300° F. During this heating the mass undergoes chemical changes and on examination, at the close of the process, it is found that a portion of the sulphur has combined chemically with the India-rubber to form certain sulphur compounds, different from the original gum. Another portion of the sulphur may be found to have combined with some of the metallic oxides present, converting them into the sulphides of those metals. A third portion remains mechanically mixed with the rubber and can, to a large extent, be removed by boiling the article in a solution of caustic alkali. Finally, the last of the sulphur has escaped, either as sulphuretted hydrogen gas, formed by its union with hydrogen derived from the gum, or as sulphurous acid gas, in case any air, as is frequently the case, was present. In short, the sulphur has partly escaped and partly become combined.

Now if litharge or white lead were used, the metallic sulphide formed will be sulphide of lead (PbS), which is black, and the rubber will assume in vulcanizing the characteristic black color of this compound. Zinc sulphide (ZnS), on the other hand, which would be formed if zinc white is present, is a white compound—in fact it is the only white metallic sulphide known, and so it is admirably fitted to use in white rubber, which must be vulcanized and still retain the white color. To be sure, whiting, Paris white, infusorial earth, baryta, gypsum, magnesium oxide, etc., remain unaffected in the vulcanizing process and do not form sulphides, but, while these materials retain their white color, its quality is greatly inferior to that obtained where zinc white is used. These remarks, therefore, merely apply to such metallic oxides as combine readily with sulphur to form sulphides, it being remembered that most sulphides are either colored or black.

Another point, generally unknown to rubber manufacturers, is that while vulcanization turns part of the zinc oxide into zinc sulphide the latter imparts to the rubber a stronger white color than the former.

Inasmuch as the chemical changes that have been mentioned always take place and cannot be overlooked, it follows that any material used for the production of white rubber, which contains lead, will be unfit for use, for this lead is bound to form a black sulphide which will discolor the goods to a greater or less degree, according to the amount of the lead salt present. Lead is, therefore, the chief impurity to be guarded against, and too much care cannot be exercised in testing the zinc oxide for it, before use.

As a rule, all samples of zinc oxide which contain enough lead to make them utterly unfit for use in producing white goods can be distinguished and picked out by the following rapid and simple test :

Dissolve, by boiling in a test tube, a small pinch of the oxide, treated with about five volumes of pure glacial acetic acid, until a clear solution is obtained. If the solution remains turbid after long boiling, filter, then add at least an equal volume of water and three drops of a strong solution of chromate or bichromate of potassium. A golden yellow precipitate of chromate of lead, the well known chrome yellow, will form and settle out. If this appears to any extent, there is enough lead present to make the zinc oxide unfit for use.

While this quick test answers very well to throw out distinctly bad samples, it is not sufficiently delicate to detect the smaller quantities of lead that may be present. If an estimation of these is required, the method of Mylius, by which the smallest traces of lead can be detected, will be found to combine quickness with great accuracy. The method is as follows :

"Dissolve about 5 grams of oxide in warm dilute sulphuric acid (1 to 4). An absolutely clear solution shows, *a priori*, the absence of lead, but in most cases the solution will be turbid. It is filtered and the precipitate thoroughly washed. The filter is then digested in a warm 20 per cent. solution of ammonium acetate, for several hours, whereby any lead sulphate present is converted into lead acetate and dissolved. The solution is then filtered and traces of lead can be detected in the filtrate

* Member British Society of Chemical Industry, Deut. Chem. Gesell., Am. Inst. Min. Eng., etc.

by sulphuretted hydrogen, which throws down the black sulphide or by potassium bichromate which forms chrome yellow."

It is a delicate matter at best to test for small traces of lead, so that in most cases, where the manufacturer is unfamiliar with chemical tests, the greatest satisfaction would be obtained by sending a good average sample of each shipment of zinc white to a reliable chemist, who will determine the exact percentage of lead present. The above test, however, when carefully conducted, will give very satisfactory results.

The method may be shortened by washing out the residue from the filter into a beaker with a rapid stream of boiling hot water from a wash bottle, and adding at once strong ammonium acetate solution. The turbid solution almost immediately clears up and may be tested with bichromate of potassium, as above. This modification of the method will answer every purpose for the qualitative examination of zinc oxide.

A test that many paint men use and that any one may employ is to take two small samples of zinc oxide, one of which is known to be pure. Place them side by side upon a glass plate and pour a few drops of sulphide of ammonium over each. The pure sample will remain white while the other, if it contains any lead, will be perceptibly darkened. This test will develop less than one-fourth of 1 per cent. of lead.

Zinc oxide when sold for rubber work is generally of good quality and is rarely adulterated, but as it is sometimes mixed with baryta and with gypsum when used as a paint, it does no harm to look for these substances in the zinc white used for other purposes. In such cases the test of solubility, in either dilute muriatic or sulphuric acid, may be employed, the zinc white being readily soluble on warming, the baryta insoluble, and gypsum but slightly soluble. If great difficulty in solution is met and a white residue remains, one of these substances is probably present. The best grades of zinc oxide, however, are very pure.

Zinc oxide is prepared in various ways, either by the wet or the dry process. The wet process usually depends upon the precipitation of zinc as carbonate from its solution, freed from other metals, filtering, washing, drying and igniting the carbonate to oxide. The wet process is now rarely used for the preparation of zinc oxide on a large scale. The dry processes consist in either obtaining the zinc oxide by burning pure spelter, or in volatilizing the zinc by heat from very pure ores mixed with coal and obtaining the zinc oxide direct.

In the first process, which is the one extensively used in Europe, the very best and purest qualities of spelter, free from lead, are employed. The zinc white is obtained by oxidizing the metallic zinc in fire-clay retorts, placed, to the number of 8 to 18, in a reverberatory furnace. As soon as these retorts are at a bright white heat, cakes of zinc are placed in them and the vapors of the metal, on leaving the retorts, are brought into contact with a current of air heated to 300°; oxidation results, and the oxide, a very loose, snow-white, flocculent material, is carried by the current of air into condensing chambers and gradually deposited. The oxide thus prepared is of a pure white color and is immediately fit for use.

The manufacture of zinc white from natural oxide or oxidized ores can be practised only with pure materials and a smokeless fuel. The following outline of the process as carried on by the foremost zinc manufacturers of the United States will suffice as an example: The ores used for this purpose, which contain about 20 per cent. of zinc, are mixed with 50 per cent. of pea or dust coal, rolled and screened, and the fine ores are treated separately from the coarse though similarly. The furnaces are single or double reverberatories in which the charge is placed upon heavy rolled iron grates, with perforations for the passage of air. The charge for a single furnace (5x3 feet) consists of 240 pounds of ore, 120 pounds anthracite, and 100 pounds of pea coal as a bed. For the double furnaces (8x5 feet) 640 pounds of ore, 320 pounds of coal and 240 pounds of pea coal. No fluxes are added, the object being to keep the charge from becoming impervious to the blast, which is furnished by four fan blowers. The process lasts four hours for each charge and a workman tends four furnaces, cleaning out and charging one each hour. The chemical reactions which take place give a curious instance of the performance of reduction and oxidation in the same furnace at the same time. The blast first oxidizes the lowest coal to carbonic acid or carbonic dioxide, which, passing upward through the bed of coal, is reduced to carbonic oxide. This reduces the zinc oxide of the ore to metallic zinc, while the carbonic oxide becomes carbonic dioxide once more. The zinc volatizes at the high temperature resulting, and its heated vapors uniting with the carbonic dioxide, are again oxidized. The oxide of zinc thus formed is carried along a conducting channel, over a sheet of water into a cooling tower 75 feet high and 80 feet circumference at the base. Much of the damp, impure oxide settles in this tower; the remainder is conveyed downward through another tower 50 feet high, and is forced by an exhaust fan, through another channel or cooling chamber, having a flooring of sheet zinc, on which another portion of impure oxide collects. The remainder is carried forward by the draft into the bag-room where a large number of muslin bags 30 feet long, are suspended vertically from the sheet iron tubes conveying the oxide. Through these bags the air and gases of the draft leak out, while the flocculent zinc white powder is retained. The bags are shaken every four hours and the oxide is removed. By a similar method the red oxide ores of New Jersey are manufactured into zinc white.

Sometimes zinc ores, found in combination with much galena, the native sulphide of lead, or a purposely made mixture of the two, are smelted together with raw coal and slaked lime in a furnace which is simply an enlarged Scotch hearth. By using a very hot fire large quantities of fume are produced. This impure fume called "blue powder" is ignited and allowed to burn for several hours, by which means it is converted into white coherent crusts. These crusts, together with the rich hearth slags, resulting from the first smelting, and some oxidized ores are then smelted once more in a low shaft blast furnace called

"slag-eye," where an extremely high temperature is maintained. The products of this smelting are pig-lead, slags poor enough to throw away, and the fume which is now perfectly white and is condensed in a manner similar to that described above. The product is somewhat variable in composition, but it usually contains from 5 to 10 per cent. of zinc oxide, 15 to 18 per cent. oxide of lead, and 60 to 70 per cent. sulphate of lead. This process, which is called the "Lewis & Bartlett Bag Process," furnishes a product which has been claimed to be superior to white lead in compounding rubber. It is now carried on in south-west Missouri at Joplin, but the product is used as a paint. As a rule the best zinc oxide obtainable is that made directly from the purest grades of spelter, for then only can immunity from the objectionable lead be secured.

THE DETERIORATION OF DRUGGISTS' RUBBER GOODS.

By I. A. Sherman.

IT has happened to every retailer of rubber goods, no doubt, that some of his best lines, whether in cases or unpacked, have at times rapidly deteriorated. As a rule this deterioration takes the form of a series of fine surface cracks that show to the experienced rubber-man that life has departed. When a great variety of goods are carried it is practically impossible for the retailer to decide upon the cause of this trouble. As he is usually a man who understands the rubber business only as a handler of the finished goods he is at a loss at the outset for some of the most necessary data, and is ready to believe the plausible explanation of the first commercial traveller who happens in. Suppose the goods that have "gone back" be stationer's bands. They may have been burned in the vulcanization, which means a greatly shortened life. This state of affairs could be distinguished by the expert by the sense of smell, as over-cured rubber has a faint, burned molasses odor, or he might have suspected it when he saw that there was no bloom. Just here it should be said that sulphur-cured goods in sundries should "bloom" as an evidence of their integrity. Goods, however, that are cured by sulphides may be of the very best quality and never show a trace of bloom.

Another cause for deterioration in fine goods is exposure to warm dry air. The owner of a large rubber store, and one who has unusual chances for observation, noted that certain shelves containing boxes of rubber bands were apt to hold damaged goods, while others universally held perfect goods. A brief investigation disclosed the fact that back of the shelves that held the poor bands was a hot-air pipe, and that the conditions were such that the goods could not help oxidizing. The result was that all the bands were removed to a cool, dark place, and there was no more trouble. As an advertisement an enterprising staticner filled the whole of his window with bands in bulk and sold lots of them. Those that went out in boxes were all right, while those that he sold from his pile in the window were the cause of endless complaints. The trouble was the sun shone in on the bands and destroyed their life. It is an old story with rubber manufacturers that while a little sunlight is an excellent thing for bleaching and softening goods, too much of it will spoil them.

A manufacturer in New York, who makes a line of surgical goods, has adopted the practice of placing such articles as catheters and small tubes in water and he claims from this method very good results. It would seem that as the natural home of caoutchouc was in places of excessive moisture, first principles would consign its manufactures to its original element. But this theory finds few champions. To immerse rubber goods in water would require the Croton reservoir for those kept in New York alone. Opposed to this theory is the practice among manufacturers of drying out their rubber.

For a long time many dealers in druggists' sundries adopted the practice of keeping their goods in air-tight tin boxes, but among experts this method is considered illusive and it has fallen into almost general disuse. Well-informed rubber-men, and among them are manufacturers who place some of the best goods on the market, discard this theory. Another set of theorists, especially in Europe, maintain that a process of dipping vulcanized articles in a bath of paraffine heated to 212° F., and then stretching them in a very hot room, is productive of excellent results. Also that a varnish of paraffine will preserve goods to be carried in stock. This method has obtained credence in one of the leading scientific journals of America. Paraffine mixed with unvulcanized rubber will destroy the latter in a short time, and it is very problematical whether it would not have the same effect on vulcanized goods. Certain it is that this method is not practised in America, and if it is in Germany it is yet to become generally known.

Exposure to the air is not considered by practical men as detrimental; indeed it is favored by some of them. They maintain that preservation is a matter of vulcanization and that alone. English scientists say, however, that air deteriorates rubber owing to its oxygenating influence. Possibly there may be a difference in climate which may account for this discrepancy in views. In support of this latter theory it is known that a jet of oxygen turned on a rubber ball will cause it to become sticky, then rough, and finally eat a hole in it. In this view of the case the purer the air the more deleterious its effects. Amid all these theories the prime fact remains that the best preservative of rubber in this climate is its proper vulcanization. If an error is made in this regard rubber goods will not last long.

This difference in vulcanization makes the life or quick decay of the goods. Almost every household has syringes and other articles which are left around without care and

if they come from some manufacturers they seem never to wear out. A bulb was shown recently in one of our manufactories that happened to be stamped with the date of manufacture, nine years before. Bands have been found on papers known to have been put away as long ago as that, and in both instances a large degree of elasticity was preserved. Both of these cases had for their illustration rubber cured with sulphuret of antimony, but good articles cured with sulphur as made by our leading manufacturers fall only a little behind this mark.

As a rule grease or oils have a deleterious effect upon rubber, causing it to sponge. The English, however, say if the oil is sufficient to exclude the air it is a benefit. Again the matter of climate is a factor in this regard.

Hard rubber lasts a wonderful length of time, being practically indestructible with ordinary use. Exposed to sunlight goods will look shop-worn in appearance, and that is all. The conclusion arrived at in the preservation of druggists' sundries is that goods properly cured will last for years without any extraordinary care; improperly vulcanized and adulterated any care of them is only a makeshift to preserve them until they find a buyer.

GROWTH OF THE DRUGGISTS'-SUNDRIES TRADE.

Told in Interviews and Correspondence.

"THERE are a few special lines in druggists' sundries which may be said to have outstripped the others in importance, including syringes, water-bottles and nipples," said Mr. Thomas E. Studley, of the Goodyear Rubber Co., to THE INDIA RUBBER WORLD. "In the production of water-bottles the Union Rubber Co., with its factory in Harlem, was a pioneer, making them under a license from the Goodyear people, which right was exclusive under the system pursued by the owners of that patent. They made a very good bottle, a fact substantiated by the very slight advance in quality and workmanship now seen in those goods when compared with the article produced, say, twenty-five years ago. Owing to the high prices and other reasons not especially apparent now, the growth of the business was very slow, ten gross per year probably comprising the extent of the output in those days, against say 500 gross per annum at the present time. It is hard to say when the sale of water-bottles first obtained an impetus, but doctors and nurses soon began to see their convenience, and when the new device was contrasted with the glass bottle, or the primitive brick, or even the bag of sand which, however, is no mean alternative now, these latter slowly passed away and the invalid if he became in any way confirmed had more peace of mind if there was a rubber water-bottle in the house. Certain it is that there is no single article in the whole line of druggists' sundries that had so large a growth in sales as the one about which we are talking.

"In the manufacture of syringes there were two, known under the general name of 'bulb'—the double, under the Davidson patent and the single, or Mattson's. These syringes were made during the life of the Goodyear patent, but it took considerable time to introduce them to the trade. After the Davidson patent expired prices were reduced and the sales in a short time became very large. During the life of that patent the extreme volume of sales was a thousand gross per annum; to-day the sale is certainly ten times that amount.

"In nipples there has been a great growth and prices have also been very much reduced. When they were first introduced the price was $8 per gross, and if they sold a thousand gross per year they thought they were doing well; to-day the price is less than one-fourth of that sum and 50,000 gross is an approximate estimate of the sales. In cushions and bandages there is a large sale, and in air-pillows, air-beds, ice-caps, bags and all the other articles which go to make up druggists' sundries the demand is a good one, but the aggregate of sales is small when considered in comparison with those previously mentioned, and does not materially affect the volume of business.

"The atomizer is comparatively a new article, and it is to be likened to nothing else in the rubber-goods line. Its sale as yet is small but still it is becoming an important article in the trade. It cannot be considered as a staple but rather as a fancy article. Its form and design fluctuate with the whims of the trade. Physicians are not particular about its style and shape, while for general use the desire is to obtain something that is attractive to the eye, the purpose for which it is intended to spray perfume, etc., being considered next. Prices vary very much, competition in this respect keeping pace with the idea of getting something to catch the popular taste.

"In hard-rubber goods the pace has not been so rapid, the manipulation of it being more expensive. They have been before the public for some thirty-five years. The chief point in favor of hard rubber is its superiority to metal, still its scope can be said to be limited. It has the advantage of being as firm as metal and at the same time will not corrode, nor is it affected by acids, qualities very important in the uses required of it. Ten years ago three-fourths of the pipes of syringes were made of metal; to-day nine-tenths of them are of hard rubber.

"In the stationer's line the number of articles is relatively small, and outside of bands and perhaps pencil tips, rubber makes comparatively little headway. In rubber bands there is naturally a large demand, but rulers, inkstands and school goods are too expensive. The demand for these goods is in the hands of school committees, who will not pay what they consider to be an extravagant price for even high-grade goods. A wooden penholder costs at the rate of $1 per gross, while the same amount of money will only purchase a dozen of the hard-rubber sort. Glass inkstands are worth $2 per gross, while hard rubber will cost that much per dozen. The price is the stumbling-

block. Rulers are in the same category, the wooden one being fairly given away by dealers. In erasers, since the expiration of the Goodyear patent, the business has become enormous. The eraser nicely made up has largely given way to the pencil tip. Pencil manufacturers make little note of the tip in the prices they name to the public, apparently ignoring the cost of the latter altogether. These tips are not ink-erasers, which are different in their compound, some makers putting in a little flour of emery, but the sale of the eraser in the old form is not five per cent. of what it was. In the druggists'-sundries and stationers' lines there is very little foreign competition, prices, quality and taste having fairly landed the whole market into the hands of the American manufacturer."

A PIONEER DRUGGISTS'-SUNDRIES SALESMAN.

THE growth of the druggists'-sundries business is aptly illustrated in an interview with Mr. J. F. Doty, of the Atlas Rubber Co., of New York, by a representative of this journal. "It was a score of years ago," said he, "that the Mattson Rubber Co., with which I was then connected, arrived at the conclusion that it would be to their interest to deal directly with the large houses throughout the country, and I happened, in pursuance of that decision, to be the pioneer traveller with only 'druggists' sundries' to sell. Before that time we had reached that class of houses through three or four concerns in New York, but there were many advantages to be gained in selling direct. The taste and wants of the customer could be thus better known, the matter of prices could be better gaged, one's competitors could be more closely watched, and the rise and fall in the demand for goods be learned more promptly. Our chief and then almost only competitor apparently had never given the idea of a traveller much consideration, and the field was an open one. We formed the plan of trading only with houses that would take a bill of $500 from us, and if they would do that such prices would be given as to make it a substantial object to deal with us. Prices in those days were in many cases 150 per cent. higher than at present, and the assortment was not large, or unwieldy to carry. A simple valise was all I needed. I was on the road for four years.

"I remember the Richardson Drug Co., of St. Louis, who went out of business three or four years ago. In those days they had thirty travellers on the road, and naturally they distributed a large amount of goods. They had one of the boldest, quickest and shrewdest buyers with whom it was ever my fortune to meet—John S. Moffat. I simply needed to meet him, spread out my samples, and in fifteen or twenty minutes he had bought $2500 or $3000 worth of goods. There was very little effort on my part, his knowledge of what his company could sell, with a remarkable rapidity of decision, being the factors in all transactions with him. He afterwards became a member of the Moffat West Drug Co., which is now in business in St. Louis. Another firm still in existence who bought largely was the Meyer Drug Co., of St. Louis. While many of the old houses are still in the field they have changed their buyers.

"At that time 'Tom' Ballard was buyer for Morrison, Plummer & Co., of Chicago, and he was a very large one. Another good house was that of Peter Van Schaack & Sons, of Chicago, who are still in business. Also in Chicago there was and is now Lord, Owen & Co., and the immense house of Fuller & Fuller. In Peoria, Ill., there were Singer & Wheeler, of whom Mr. Singer was then the buyer, but the firm now employ another buyer. Noyes, Bros. & Cutter, of St. Paul, were also an immense firm, disposing of a large line of goods in that section. This list could be extended indefinitely. In a four weeks' trip I could gather in enough orders to keep the factory going for three months, and at good prices. Now it is a little different. Every company in this line of business has out its travelling men and competition has beaten down prices more than one half, but we have learned to be satisfied with the situation, and we are in anticipation of a good business this year."

THE TRADE IN PHILADELPHIA.

[BY OUR RESIDENT CORRESPONDENT.]

THE trade in druggists' sundries in Philadelphia is extremely brisk. A personal interview with the leading houses in the city in this line brought out uniform answers to all my questions. The first visit was to the large house of Smith, Kline & Co., on Arch street above Fourth. Their manager stated that they kept in stock everything in rubber used by physicians in their practice and by druggists in their business. The articles meeting with the greatest sale are syringes, fittings for nursing-bottles, and hard-rubber combs.

"In regard to the quality of goods demanded by our customers," said the manager, "it varies greatly. Some purchasers want only the very best makes, while others again want the cheapest. It all depends upon the neighborhood the drug-store is situated in. For instance, a man in a place occupied mostly by laborers would only pay $3 or $4 a dozen for syringes, and a druggist in an aristocratic portion of the city wants syringes at $15 and $18 a dozen. There is a tendency, though, toward cheaper goods in our entire line of rubber articles.

"I do not find that physicians or druggists in buying prefer special makes or brands. We deal only with druggists, and they order only what the doctors tell their patients to get. Sometimes a doctor in ordering a patient to get a hot-water cushion or a water-bottle will name a certain brand and the druggist when he gets the order will send for that brand, but in the majority of cases the consumer will take the styles or brands which the druggist may have in stock.

"In regard to selling any foreign druggists' sundries, we don't do it at all. The rubber goods we have in our building are all of domestic manufacture so far as we know. Perhaps some combs of the hard-rubber sort come from over the water, but nevertheless we buy only in the United States.

"Do I find any difference in the durability of white and red rubber goods? Well, our experience is hardly sufficient to answer that clearly, but in my estimation the red rubber

is the best, but I think a rubber that is nearly transparent the purest. We buy our goods mostly through drummers who visit us about once a month.

"Our sales show us that the demand for water-bottles is almost trebling every year. The public are getting out of the old-fashioned ways of heating bricks and salt bags and using cushions, and are daily finding out that hot water is much handier to use in bottles and other articles manufactured by rubber. Yes, indeed, this branch of our rubber sundries is away ahead of all others."

Farther up the street is the house of Bullock & Creashaw, one of the largest houses in Philadelphia for druggists' sundries. Their manager, Mr. Bullenger, said:

"We keep in our store all kinds of rubber-goods that we find there is any call for at all among our customers—from nipples up to the long rubber bandages and ice-bags. Combs with us are away in the lead for the largest sales. Our customers, like all the rest of the world, want the very best makes of goods for the least money, though a few sensible ones buy only the finest, without being governed wholly by the price. We do not find that any special brands are called for by our customers. They generally say what article is needed and trust to us to send them the right thing. The price is generally the guide. The only foreign sundries we keep in stock are the German makes of hard-rubber combs; the rest is all of domestic manufacture. We find that the white rubber goods, containing as they do so much sulphur, give way the quickest, then comes red, while the transparent and maroon color rubbers are about the best. Black rubber for nursing bottles and nipples is most preferred by consumers, though, the idea being perhaps that they are cleaner and sweeter. We order our goods mainly through drummers.

"Do we find the general public using more water-bottles than in the last two or three years? Well, I should say they do, and rubber cushions, too. It seems to me that we sell six times the amount that we used to do."

Another old firm of druggists is the long-established one of Turner & Wayne, also higher up on the same street. Mr. Turner was found looking over his stock and cheerfully answered my questions.

"We keep all rubber sundries in stock," said he, "that we think a druggist or doctor needs, such as syringes, pessaries, combs, tooth-brushes, nipples and teething-rings and we sell the most of syringes and combs. The quality is rarely considered by the customer, who wants the most for the least money. I find, however, that the dark rubber is preferred. There is no special inquiry from physicians and others for special brands, the consumer being willing generally to take what the druggist offers, and you may be sure that he offers the one that he gets the most profit on. All our goods are domstic; we keep no foreign manufactures in stock. In regard to the durability of rubber goods I think the white is about the best, but every year they are getting more perfect in the making. In buying our goods we consult papers, circulars that are sent us and buy from the drummers, but if we think there is a good thing in the advertising columns of the newspaper we will order samples any way. The sale of water-bottles is growing every day."

THE TRADE IN BOSTON.

[BY OUR RESIDENT CORRESPONDENT.]

THE sale of rubber goods has become one of the most important branches of the drug trade in this city. Although the profit on such goods is not apt to be high, druggists all keep them in stock. Probably one-half of the people visiting the retail drug stores here go after goods which are made wholly or in part of rubber.

Harlow E. Woodward, the well-known Bloomfield-street druggist, and one of the largest retail dealers in the city, said:

"We don't sell enough rubber goods to enable us to live in a stone front, neither do we ride behind a coach and four, but we couldn't carry on the drug business without a line of these goods. The demand for them increases year by year, and I think I might say month by month. Of course this is largely due to the novelties which are constantly being invented. We keep in stock everything worth having, and for which there is the least demand. This includes the rubber nipple for the nursing-bottle and the rubber blanket for the sick-bed."

Mr. Woodward added that his customers demanded the best article to be had in the market, and said that they were willing to pay for the best. He does very little business with the physicians, but says that those who do come to his store for goods pay much more attention to the general appearance of the article they seek than they do the maker's name. In Mr. Woodward's own words "They appear, for all that I can see, to think that all rubber goods are manufactured by one and the same firm, and they have not the slightest idea as to who or what that concern is or where it is located, nor do they appear to care." Mr. Woodward finds that the trade in rubber goods is much better during the holidays, when he disposes of large quanties of novelties, such as rubber combs, brushes, etc.

Mr. Theodore Metcalf, the senior member of T. Metcalf & Co., who is said to be the oldest member of the drug trade in Boston, said: "We don't make so very much money on the rubber goods which we handle, despite the fact that we sell a very large amount of them. We keep the full stock on hand that we do simply to accommodate our customers. They come in for an ounce of this or that and incidentally call for an atomizer, a syringe or a hot-water bag. We carry all of these, also a complete line of combs and brushes, both of which are made largely of rubber. We very seldom see a physician. If they want anything in the rubber line they go to the wholesaler who furnishes them with their drugs and medicines and they get them at the same prices as do the regular retail dealers. This I think all wrong. Sometimes we receive a prescription, as you might call it—a note from some doctor calling for a syringe, a nipple, or a water-bag, to go along with some other order. It is very seldom, however, that any particular make or style is asked for. I don't believe that there are $100 worth of imported rubber druggists' supplies sold in Boston in a year. In making this statement of course I refer to the smaller articles, and not to one piece occasionally—some specialty which might cost several hundred dollars. I think I am safe in saying that our

customers find the red and black goods the most durable."

Although Mr. Metcalf stated that he bought direct of the manufacturers, going, in fact, to their offices for them, he added that he did not do this until he had looked over the trade journals and found out what were the latest and best things in the market. THE INDIA RUBBER WORLD is read regularly by Mr. Metcalf and he exerts himself to get his clerks to read it also, believing that by doing so they become better informed and of more value to him as salesmen.

Senator G. D. Gilman, of Gilman Brothers, wholesale and retail druggists on Washington street, is especially interested in the rubber branch of the drug trade, having spent a good portion of his life in the rubber-producing countries, particularly at Pará and other points in Brazil.

"We try to handle all brands and makes," said he. "Formerly we used to import large quantities of rubber druggists' sundries. This is all over now. We have had it demonstrated to us most thoroughly that we can not only get as good and durable goods in this country as we can abroad, but we can get them cheaper, though I am not prepared to say why this is so. Our customers always consider the quality of the goods before they do the price. They want a good article and are willing to pay for it. Understand me, however, I do not mean to say that this is general throughout the city. In our case this fact is due wholly to our location and the class of trade which that brings us. I can take you to plenty of flourishing drug-stores right in the very midst of the city where the customers invariably ask for the cheapest grade of rubber goods and will take no other. As a matter of fact, a larger profit is made on these goods than on those which we are compelled to handle. We see but very few doctors and the ignorance which they almost invariably show as regarding rubber goods is simply appalling. They rush in and ask for a syringe. Perhaps they want a fountain syringe. If so they say so, but it is only one time in a hundred that they will specify any particular make or pattern. We find that the red goods are not as durable as the others."

Mr. James S. Potter, the well-known "Highland" druggist, said: "The fact is that we used to sell nearly all of the goods usually found in any well-regulated drug-store, but during the last two or three years our trade in these goods has fallen off very materially. The trade has gone to those houses who handle rubber goods exclusively and who have succeeded in about crowding us out. They of course carry a much larger stock than we can afford to and it took the public but a short time to find this out. Nevertheless we continue to keep a very fair stock of hot-water bags, syringes, atomizers, nursing-bottle supplies, rubber rattlers, combs and brushes."

Oliver Park says that although he carries a full line of rubber druggists' goods he doubts if he sells enough to make it pay. He is surprised that while each year serves to bring out new novelties and inventions it also serves to lessen his trade, and he finds by inquiry that the same is true of other dealers. When your correspondent suggested that it might possibly be that the rubber houses were capturing the trade they once enjoyed, Mr. Park said that he hadn't thought of that before but he supposed that it might be so.

Harrison D. Lord, one of the largest retailers in the eastern part of the city, states that he sells nearly as many dollars worth of rubber goods as he does of drugs and medicines. He keeps rubber blankets for the sick-bed, syringes, atomizers, rubber tubing, combs, brushes, etc. He finds that as a rule the buyer wants the best article that is to be found in the market and does not object to paying for it. Physicians do not patronize him to any great extent. When they do they generally take what he has and ask no questions. He handles no imported rubber goods and, enjoying a very large acquaintance with the other druggists of the city, says that he feels safe in saying that they do not. He doesn't hesitate to state from the experience he has had that his customers find the white goods much more durable than the colored ones.

FOREIGN COMPETITION NOT FEARED.

AS a rule the manufacturer of druggists' sundries, unless it be of the hard-rubber sort, feels little interest now in foreign competition, and never did fear it. The patents of Goodyear, in America, and of Hancock, in England, were almost simultaneous. With Europe and America on a level at the start, invention naturally took the lead in this country, for the reason that our labor was more expensive and there was a greater incentive to arrive at economical methods. Then during the greater part of the time covering the growth of the rubber business, and especially that of the line of druggists' sundries, our tariff laws have been a bar to the importation of goods, but this is not much of a factor now. The oldest men in the business cannot recall a time in the growth of this line when foreign competition caused them any uneasiness.

There are few articles imported in the soft-rubber line Once in a while a unique surgical instrument, which is known abroad and which cannot be found here, is brought over to please a particular customer. Medical science abroad often produces the best article for some special use which would hardly be thought of here. In such cases the article is speedily copied here, and the fact also remains that very few of these instruments have soft-rubber attachments. There are, however, more substantial reasons for the failure of the foreigner to meet our wants in the druggists'-sundries line. The great bulk of this line is composed of syringes, water-bottles, nipples, atomizers and kindred articles.

Take the syringe for instance. We struggled along with the inconvenient, old-fashioned metallic-piston syringe until 1851. It required the assistance of a second person,

and any improvement in it was hardly worth the thinking required to formulate it. Maw, in England, made the elbow tube for it, but it was left for Americans to invent the rubber bulb and then introduce it abroad. To-day the Americans have houses in England and France for the distribution of syringes and other articles.

The atomizer is peculiarly an American institution. Foreigners, until recently, have not used it to any extent. Educated foreigners will tell you that they are used on the continent, but are articles of luxury and are bought only by the wealthy, whereas here they are on the table of every maiden in the land. The American dealer will also remark that we do not sell so many atomizers in St. Paul, Denver and other places having a high altitude. The atomizer when used for medicinal purposes has its home and use on the Atlantic coast, where throat and nasal diseases prevail, and has come in our modern civilization to be an essential for the prevention and alleviation of maladies which are incident to our atmosphere. For spraying perfumes, of course, it is used the country over, not alone in the home, but as an adjunct to every first-class barber-shop.

In some other articles the foreigner has made at times sporadic attempts to introduce his wares and obtain our favor. These attempts have been so weak, and so devoid of results, that they never have caused a ripple in the trade here. The manufacturer abroad seems to be skilled in compounds, and in securing beautiful and durable colors. That Americans appreciate this is shown by the interest they take in the various compound-sellers who visit the factories periodically. Most of these men are frauds but they usually sell their secret, chiefly because the American manufacturer believes there may come along some day an honest man with a valuable secret and he is not willing to run the risk of missing him.

The ordinary bulb is thrown around the house for years sometimes used, and then neglected, never having much care given to it, but when wanted it comes up smiling and performs its duty. Ten years is getting to be the ordinary life of such an article and the foreigner never has sent us such goods, however well he may serve himself. Our machinery is well-nigh perfect, a point which does much to lessen foreign competition.

When we turn to hard rubber, however, the picture is changed. Here labor is a factor and almost all manufactures of it are practically indestructible. For this reason the importation of the rigid parts of atomizers, syringes, etc., is in large proportions. In these, labor sometimes forms as much as 75 per cent. of the cost, and when we consider that our tariff protects the manufacturer at the most 35 per per cent. and the price of labor is so cheap as we find it in Germany, the result can be readily divined by a mathematical calculation. Goods have to be made very cheaply here to compete with the importation, and one result is that a large factory in Germany is owned in part by American capital. Hard rubber is the outcome of American enterprise, but it was not long before it was found that it could be made into goods cheaper abroad, and the importation has not flagged for a generation.

In the rubber business the line of druggists' sundries has been built up chiefly by the skill of our manufacturers who have been quick to see how rubber could be substituted for other material in uses for the sick room and hospital, and then in the next step have carefully worked out a convenient article and then have given to it the very best material. In taking faithfully these three steps they have, unconsciously perhaps, avoided foreign competition, but have in the past obtained good profits, which in its turn has evolved a home rivalry which is really the only danger to the trade at the present time.

THE TRADE IN QUESTIONABLE RUBBER GOODS.

By T. J. B. Buckingham.

IT is a very difficult thing to keep a secret. Especially is this true when the secret is the property of any certain trade or guild. Since early in the fifties there has flourished in the United States a business which is dignified by the title of the manufacture of questionable rubber goods. Prior to 1850 the merchandise was brought in from Europe, not as a regular import, but in small carefully-guarded packets that got by the customs officials without paying duty. There is to-day a small business done in this kind of smuggling, but it is not very remunerative and doubtless will soon cease entirely. Knowing that there might be a feeling of surprise and disapproval if they made this business public, the few manufacturers who have supplied the American market have kept themselves carefully in the background. While their goods have gone to the drug trade all over the land, the name of the makers or the location of the factories is a trade secret which the purchaser is very loth to divulge.

A visit to a factory where questionable goods are made would mean very little to the uninitiated. A moderate-sized room, with windows so draped that the outside world may not peer in, small zinc-covered tables, racks in which hang rolls of pure sheet rubber, and half a dozen workers are about all the first glance would reveal. In these smaller places where the output is small and the goods are sold in a stealthy, shamed-faced way but very little money is expended on the plant. Everything looks as if the proprietor was all ready to pull up stakes and hurry away. In visiting the place the stranger feels as if he had a discovered a den of counterfeiters. The process of making up is simple here. The pure-gum sheet spread thin and smooth, and very likely brought from some large firm ostensibly for "dress-shield" work, is cut into pieces of the proper shape by small cutting-dies. These are then made up on a "former" and dipped in a vulcanizing solution. Another process is to cut the pure gum double, knit the edges and inflate the article,

and while the air is in it to dip it repeatedly into the vulcanizing solution until it is cured. Several years ago a foreign chemist in New York made no secret of the fact that he was about to put upon the market a line of goods made from rubber dissolved in bisulphide of carbon and dipped on glass formers, but the goods never came. Whether his courage or his process failed is not known.

That there are other factories small but equipped with sensible machinery and where the business is looked upon as legitimate and done in a straightforward business-like manner is undoubted. In these the outfit of molds, presses and skilled workmen are complete and the output sold for medicinal purposes only.

It is said that the business in goods of this sort amounts to $30,000 a year (manufacturers' prices) and in the past has been very profitable. Competition has, however, hammered prices down so that there is but little profit and consequently small temptation now to engage in the business. Indeed competition has come nearer to closing the factories of the makers of these goods than have the efforts of any individuals interested in seeing them shut up.

There are of course outside of the goods mentioned a variety of rubber appliances. the inventions of quack-doctors and evil-minded persons, that no American druggist would touch, and were they offered it would go hard with the seller. Goods of this sort, however, are sold by peddlers in Europe in spite of the most strenuous efforts to stop them, nor has it ever been discovered who manufactured them. As for the regular line of questionable goods such as most American druggists sell, they are in Europe considered legitimate articles of trade, and are on sale in a variety of stores. It is said that the business on the continent amounts to more than $100,000 a year, and that it is rapidly increasing.

THE RUBBER CORNER IN THE PHARMACY.

By John P. Lyons.

IT is generally conceded that the health of the human race is gradually improving; and it must be conceded that rubber as a remedial agency is constantly increasing in its scope. Now the natural-born statistician with plenty of time on his hands may well turn his attention to these two facts with a view to ascertaining in what way one is the consequent of the other. How large a part rubber plays among healing and corrective agencies, is not generally known. Comparatively few druggists devote any special department to their rubber goods, preferring to scatter them about through their general stock. There are those who set apart a show-case to this particular line; but as a general thing, articles of rubber manufacture will be found in various places throughout the store.

One of the most prominently displayed of rubber articles is the rubber brush. It comes in various forms, shapes and sizes, adapted to a variety of purposes. The brush that is in most general use is undoubtedly the hand brush. The friction of the rubber makes it particularly serviceable where the hand has been devoted to especially dirty work, such as type-setting, and calls for ablutions of unusual vigor. The erasive quality of the rubber comes into play here with great effect. There has latterly come into vogue the rubber tooth brush; not perhaps as yet affected by the public at large, but fairly popular among those who have given it a test. It is obvious that no other kind of brush can do more rapid or effective work or bring the underlying whiteness of the teeth more quickly to view. The rubber hair brush is a comparatively recent innovation; a brush in which the bristles, as well as the back and handle, are made of this article. Probably comparatively few druggists have yet branched out into this novelty; but it may be found where the line of rubber goods is particularly complete. A rubber article belonging particularly to this department, and perhaps quite as serviceable as any of the others, is a kind of rubber bathing glove, which is in short a thin pliable rubber mat, with short and pliant teeth, which buttons over the hand, and takes the place of either rag, glove or sponge, doing very much better service than any of these. Rubber soap trays are also coming into vogue; possessing the great advantage over any other kind, that they may be dropped without injury.

Probably no article in the rubber line carried by the average retail seller of drugs is more frequently called for than the syringe. Dealers whose limited space permit them only a small selection of rubber goods will have at least several varieties of these exceedingly useful little instruments. The hard rubber syringes come in a score of sizes and in almost as many shapes, with points dull, points pointed, points long and slender, and to use a Hibernianism with points round and smooth.

There are syringes for eye, for ear, for nose; syringes for rectal, vaginal, and yet other uses. The bulb syringe is extensively used in human economy, those having several different adjustable points being especially serviceable. Even the least pretentious of apothecary shops will have on hand a fair variety of these bulb syringes. The bag and the fountain syringe have a less general utility, and until recently were not always included in small stock.

Every drug-store, no matter how unpretentious, will have a variety of atomizers. These have various uses; and are always called into play where it is desirable to throw a delicate spray of any liquid, medicinal or otherwise, into the eye, the ear, nose, or elsewhere. But perhaps the most general use is as an accessory to the toilet, a subtle diffuser of perfume. These have formerly been made with two bulbs, under the impression that one bulb alone would not be able to sustain an uninterrupted spray; but later atomizers have but one bulb, as the little reservoir of air left in the top of the bottle by its elasticity will continue the spray without intermission.

Of rubber bottles, of course there is a large variety;

and this is one of the most useful articles kept in the drug-store, and one for which there is a large demand. These come in different shapes and sizes, for the variety of purposes to which they are put; and they are either covered in cloth cases, or without them. They are used for bottling hot water, and also for holding ice as occasion may require.

Among rubber bottles, one that is perhaps not generally kept in the ordinary drug-store, but which has been found very useful in veterinary work, is the horse-medicine bottle, a large bottle holding a quart or so, and made sufficiently substantial to endure a great deal of service. The advantage of this over the ordinary glass bottle is sufficiently obvious. The horse is very much like his two-footed superior, greatly averse to taking his doses; and he shows this disinclination by biting at the bottle that is put in his mouth. Where this bottle is of glass it breaks, the consequences are often quite serious; but with this large rubber bottle a horse can bite it as violently as he pleases, with no other effect than to exercise his teeth.

The human infant, like the young of other carnivorous creatures, has a great yearning to use his teeth. In fact this desire often takes strong hold of him even before he has any teeth. In this case he grinds his tough little gums together in a manner exceedingly annoying to whatever may happen to come between them. This reprehensible practice falls with special severity upon young mothers, and the inventive genius that characterizes the rubber trade has had to come to the rescue. The result is the rubber nipple which in its various forms, stands between the maternal bosom and the voracious young savage. A creditable assortment of drug store rubber will contain several shapes and sizes of these admirable safeguards. They are made long and short, large and small, and one kind has a foot or more of tubing so that the youngster may be dined while reposing comfortably in the mother's lap. They come in point of color in white, black and maroon to suit the taste of the mother or possibly the complexion of the child.

To this same department of the rubber industry belongs the tubing for the nursery bottle. All these things a properly appointed drug-store aims to keep. They may not be thrust upon the customer's attention with the same prominence as the soda water fountain but they are there.

This propensity on the part of exceedingly young people who have just come out in their first teeth and employ them with great freedom and vigor, is a healthy inclination that ought always to be encouraged; as its encouragement gives these people a set of masticators that will be of great use in subsequent years. To encourage this juvenile inclination, many rings and pads of various sizes and forms have been made; and these are always to be found in every well-regulated drug-store. Upon these articles particularly prepared for the purpose, the youngsters can exercise their incipient molars without destruction of property, and to their own abiding good.

Rubber cushions are coming more and more into vogue, supplying evidently a long felt want. Their elasticity and absolute cleanliness make them of especial service in the sick room; and invalid cushions of all kinds have superseded to a considerable extent the cushion of former days, stuffed with excelsior, with feathers, or with wool, all of them of doubtful cleanliness and of undoubted unwholesomeness.

Apothecaries who carry a complete line of rubber goods or make any pretense thereat always have on hand hard rubber bandages which in certain cases of surgery are so indispensable, being air-tight and consequently superior to every other kind.

Rubber bed-pans have been found in practice to serve their purpose admirably. While it is extremely doubtful if the average druggist keeps a large supply of these on hand, they ought to be obtainable in any store of any pretensions in the rubber line. An article belonging to this same general category is the rubber chamber-cover; it is made to fit over the receptacle perfectly air-tight. The great sanatory value of this very simple contrivance is obvious.

The rubber department of the retail drug-store is in fine one of its most important features, and destined to become more so as time goes on; for the hygienic uses to which the more versatile articles can be put are constantly increasing with man's necessities and the exercise of his inventive genius.

POISONOUS COLORS IN RUBBER GOODS.

*By Dr. Bennett. F. Davenport.**

IN considering what colors made from the metals are to be deemed poisonous and therefore dangerous for use in such rubber goods, sold by druggists and others, as are brought in contact with food, or with moist absorbing surfaces of the body, as in dental plates, the provisions of the imperial German law are of much interest. The provisions of this act passed in 1887, so far as they relate to the subject of this article are as follows:

I. All color containing antimony, arsenic, barium, cadmium, chromium, copper, lead, mercury, tin, uranium, or zinc shall be deemed injurious to health within the meaning of this act.

II. No vessel, wrapping or covering for preserving or packing of food or condiment intended for sale shall be used when prepared with any of the above-mentioned colors.

This prohibition does not apply however to the use of barium sulphate (heavy spar or blanc fixe), barium lake free from carbonate, chromic oxide, copper, tin, zinc and their alloys as metallic colors or bronzes, cinnabar, tin

* Member of the American Chemical Society, also of London, Paris and Berlin; of the British Society of Public Analysts; also Deutsch, Gesellsch. f. Angewandte Chemie. Late Chemist to the Massachusetts State Board of Health.

oxide, tin sulphide or mosaic gold, or to any color burnt in as a glass, glaze or enamel, or used as an external color upon a water-proof material.

III. For the preparation of cosmetics (that is articles that are used for the cleaning, preserving or coloring of the skin, hair or cavity of the mouth) intended for sale, the colors mentioned in I, shall not be used. This prohibition does not apply, however, to barium sulphate, cadmium sulphide, cinnabar, chromium, tin and zinc oxides, or to copper, tin, zinc, or their alloys in the form of metallic powders.

IV. In the preparation for sale of toys, etc., including water-color paints for children, the colors mentioned in I, shall not be used.

The latter prohibition does not apply to the colors mentioned in II, or to antimony and cadmium sulphides in rubber lead oxide in varnish, white lead in wax-work (provided it does not exceed one per cent. of its weight), lead chromate (alone or in combination with the sulphate) in oil or lacquer color, or if covered over with lacquer or varnish. The zinc compounds not soluble in water are to be used in rubber toys only so far as they are the coloring material in the rubber mass, or as oil or lacquer colors or are covered over with a lacquer or varnish.

It thus appears that none of the metallic colors mentioned in I, except in the very insoluble forms mentioned in III, and the less insoluble forms in IV, under the special conditions there mentioned, would under the German law be deemed as safe to be used in the coloring of rubber, which to be used in contact with food or the moist surface of the body. The excepted forms of color however, under the condition mentioned in the act, are considered to be perfectly safe, and singly or combined they will furnish most of the shades for which there is much demand.

Among the colors thus allowed is cinnabar, which has now been generally given up by physicians for use as a drug, it having been found in practice to be without any certain action, even when given internally in its free natural state, and in the relatively large doses of 5 to 20 grains several times a day. Notwithstanding this fact the use of cinnabar even in small proportions in dental plates, wherein it is well protected against the action of any solvent, has been called in question somewhat in recent years. It is nevertheless a well-proven chemical fact that even in a free state cinnabar is insoluble in water, alcohol, ether, hydrochloric, nitric or diluted sulphuric acids, cold concentrated sulphuric acid, or diluted alkaline solutions.

The use of lead in any form has for very good reasons been generally condemned, and all the forms of copper or uranium have likewise been found to be objectionable. The passage of this law in Germany which also limited the amount of lead allowable in the tin coating of vessels used for preserving food to one per cent. and in the solder used to ten per cent. has caused the adoption of vessels closed without a soldered joint, a rubber ring being substituted instead. Yet food thus preserved in Germany has often been found to be contaminated with lead, which, upon examination, has been ascertained to come from the rubber ring employed. The following results have been obtained upon analysis of such rings: Those used by a large German firm, which were made in Paris, had the average weight of 7.7 grains and yielded 66.6 per cent. ash, which consisted almost wholly of red lead, no antimony sulphide being present. These rings heated in water under pressure to the temperature of 230° to 234° F. were found to soften much, and to yield to the water about four grains of red lead held in suspension. Another ring similarly treated in the presence of one pound of asparagus was found to yield up 60 per cent. of the total amount of lead contained in the ring, and it formed a solution which would give an immediate precipitate of lead sulphate upon the addition of sulphuric acid. Rubber rings taken from tins of Australian meat put up by a large English firm were found to be of the same composition as the rings made in Paris. Rubber rings from Vienna were found to contain 63 per cent. of ash, the bulk of which consisted of lead. Rings made in Germany were found to be similar, except in having a small amount of antimony sulphide present, and this in rings from several different manufacturers.

While antimony and mercury sulphides with zinc oxide, have all come into general use in this class of rubber goods, the green of chromic oxide and the yellow of cadmium sulphide, both of which would be equally allowable, do not seem to have been as yet at all used.

THE BEST RUBBER AND ITS COMPOSITION.

By Prof. James F. Babcock, Late Massachusetts State Assayer.

WHAT is the best rubber? Most persons unacquainted with the technical details of India-rubber manufacture probably would answer: "The purest rubber—rubber unmixed with any foreign or adulterating material." Every rubber manufacturer, of course, knows that this is very far from the truth. Pure India-rubber, such as formed the South American gum shoe of a former generation, as is well known, becomes hard and brittle when very cold, and soft and sticky when warmed. The vulcanization of rubber (combining it with sulphur) remedies this and gives new properties to the manufactured product, the most important of which are increased elasticity, toughness and uniformity of quality at varying temperatures.

Ought we to conclude then, that the best rubber consists of pure gum with merely the amount of sulphur necessary to produce vulcanization? "By no means," answers the practical manufacturer; "pure vulcanized rubber is too soft and by far too elastic for any purposes except perhaps rubber threads to be used for woven elastic fabrics, as in the webbing used in suspenders, the goring of Congress shoes, etc." This statement is perfectly correct,

but it is, for the most part, unknown or imperfectly understood by the purchasers and consumers of rubber goods. The truth is that the great bulk of rubber goods of whatever description, requires in order to give the proper firmness and toughness, the admixture of a certain amount of mineral material other than the sulphur. What is the best material for this purpose? Obviously it should be soft in texture, so that it may readily be mixed in the compound. It should have good weight and body, and what is most important, be incapable of any action upon the rubber. Every conceivable compound, at one time or another, has been tried for this purpose, some with fairly good results, but most mineral substances have proved to be in various ways objectionable. What is the conclusion arrived at from all these experiments? Or, as we have already stated the question, "What makes the best rubber?" We think that the very best rubber, which in the present state of knowledge upon the subject it is possible to manufacture, is what is known as "antimony rubber," a product consisting of good pure gum and a proper proportion of what is known as sulphuret of antimony.

It is but a few years since the use of sulphuret of antimony in the manufacture of rubber goods was confined to those articles which it was desired should be of a red or reddish-brown color. There are but two pigments which will produce these colors, vermillion (sulphide of mercury) and red (commonly called golden) sulphide of antimony. The latter, costing from one-half to two-thirds less than the former, was naturally substituted, except in those cases where a very brilliant color was necessary. It has been found again and again that the sulphide of antimony possesses properties peculiar to itself, which make it especially useful in rubber goods where strength, elasticity and permanence are required, and gradually it has come into use for these qualities rather than as a mere pigment, as formerly. It may be as well to say right here that a very poor red is secured sometimes in rubber goods by the admixture of oxide of iron. This, however, has so injurious an effect that it will never be used in good rubber, and should not justly be counted among the rubber reds. If therefore purchasers of rubber goods will look for a golden red, with but little bloom, and a peculiarly soft finish, they may be pretty sure they are getting an antimony rubber. If it has been made carefully it will astonish them with its durable qualities.

Golden sulphuret of antimony, as its name implies, is a chemical compound of sulphur and antimony—two equivalents of the latter to five of the former. Of the five equivalents of sulphur, three are held in permanent combination and unchangeable at the heat of vulcanization, while two equivalents are but loosely held and readily act upon the rubber in which they are compounded. There are to-day more rubber manufacturers who understand the use of sulphuret of antimony than ever before, and yet few seem to appreciate how necessary it is to handle it differently from other pigments. If in every case a cool mill were used in the mixing and refining, if the cure were a slow one with the heat as low as possible; if the goods were taken out just a trifle underdone, the finest results would be obtainable. Often for purposes of economy manufacturers put in enough antimony to get a color and add sulphur to effect a quick cure, and of course they are disappointed in the result. Properly prepared sulphide of antimony will vulcanize India-rubber without the addition of any free sulphur to the compound, and India-rubber so vulcanized is characterized by a peculiar softness, strength, elasticity and lasting qualities. To secure these results, however, it is necessary that the sulphide of antimony should be the exact combination necessary, and not as is too often the case, an indefinite body containing uncertain and variable amounts of sulphur.

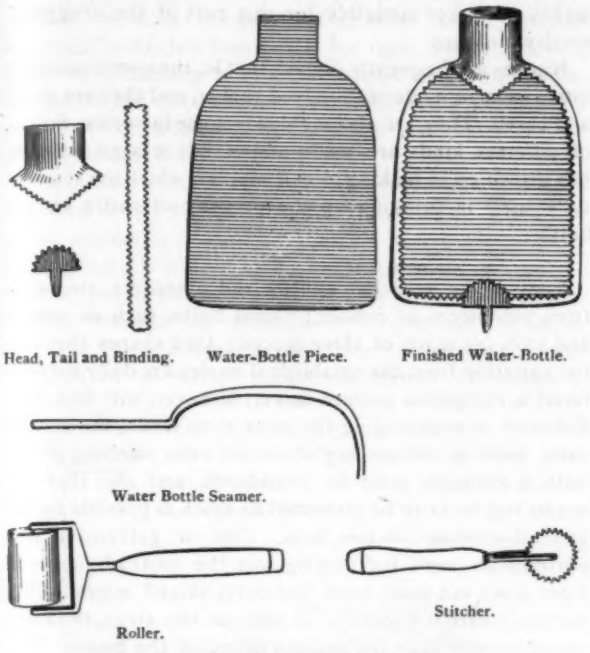
There are many ways of preparing the sulphide of antimony, but very few of these methods produce a satisfactory product for the rubber trade. In some processes the color is extremely brilliant, but the product is useless as a vulcanizer; some products which vulcanize well are inferior in color, approaching shades of brown rather than red. It is also true that there is a marked difference in softness of the product according to the particular process adopted in its manufacture.

Sulphide of antimony suitable for the compounding of India-rubber should have (1) a brilliant color; (2) definite proportion of sulphur; (3) softness and fineness, and (4) freedom from any trace of acid.

HOW DRUGGISTS' AND STATIONERS' SUNDRIES ARE MADE.

RUBBER goods for druggists', stationers' and surgical uses are made as a rule of the best grades of Pará, the best rubber in the world. To get various colors in these goods the rubber, after being washed and dried, is mixed mechanically with various pigments, such as oxide of zinc for white, lamp black for black, golden sulphuret of antimony for yellow, and vermillion for red. The mixed rubber is then run through heavy steam heated rolls, or calenders, into thin sheets. For different goods these sheets are made into rough forms from the plastic rubber and are vulcanized or baked. Take for example, stationers' bands. These goods are usually made of pure rubber with just enough sulphur to accomplish vulcanization. As a rule not an ounce of rubber shoddy is incorporated and only rarely are coloring matters used. The process of manufacturing bands is very simple. The thinly-calendered pure-gum sheet, while soft and pliable, is wrapped around a form until it is shaped like a flat tube of the thickness desired. It is then vulcanized; in other words, the rubber dough is baked. The tube is then slipped off of the form and run through a machine which cuts it into strips and the bands are ready for boxing and sale. The ordinary stationers' band is the gray band, so called because the small percentage of free sulphur which remains

after vulcanization comes out in the form of a whitish coating on the outside of the band. German rubber manufacturers make bands that look as if they were made of alternate blocks of red and black rubber. This is done by sticking sheet after sheet of red and black rubber one upon the other until a sufficient thickness is formed, and then cutting slices down through the mass, which slices are



MANUFACTURE OF WATER-BOTTLES.

wrapped around the form, vulcanized and run through the band cutter in the ordinary manner.

Rubber erasers are manufactured in much the same way as most molded goods—the rubber dough goes through the ordinary processes of mixing, refining and calendering, except that a certain percentage of finely-powdered pumice-stone or emery is incorporated with the compound to give it an erasive quality. The goods are then put into molds and cured under steam heat. Described thus briefly it would seem to be a very easy matter to make a good erasive compound, but as a matter of fact, it is very difficult. A certain manufacturer of rubber erasers in trying to get exactly the right thing for a rubber compound, one that should embody a fine cutting surface and yet be soft and pliable and free from the liability to smutch the paper, tried 175 different compounds before he discovered one that exactly suited him. It is well to state that he was rewarded for this careful experimentation, for his eraser was sold the world over as the best in the market.

Penholders of rubber are of course in the form which is known as vulcanized or hard rubber. This is simply rubber dough mixed with a larger percentage of sulphur and baked until it is burned to a tough black consistency. The strip of rubber dough is rolled up solid and looks roughly like a paper lamp-lighter. It is then wrapped tightly in fine cambric and put through the vulcanizing process. When baked hard it is unwrapped, placed in a lathe and turned to the required shape and then buffed and polished. Only a few bright colors can be secured in hard rubber as the high degree of heat to which it is subjected and the large percentage of sulphur present in the compound will destroy almost any coloring matter. Quicksilver vermillion, however, retains its brightness so that red, and black and mottled penholders can be made. Occasionally hard rubber comes out of the vulcanizer with a greenish cast and it is dipped in bisulphide of carbon which restores its blackness. Some hard-rubber goods are molded for both stationers and surgical use and the work is done so perfectly that there is no further finish needed on them.

TUBING.

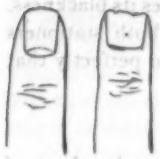
Manufacturers of "druggists' sundries," and makers of mechanical rubber goods all produce rubber tubing. Most of the rubber tubing is made on the tubing machine. There are, however, a few manufacturers who still make a most excellent article in the old-fashioned way by hand. A brief description of the process is as follows:

The sheet rubber is spread quite thin on cotton sheeting, in a roll of some fifty yards in length, which is hung in a rack at the end of a table which is zinc-covered and very smooth. The foreman of the tube-makers takes a stick, a trifle longer than the sheet is wide, and slipping it under the edge, acquires a firm hold. One of his assistants winds the cotton sheeting off while the foreman backs slowly, taking care not to stretch the long sheet which follows him. Letting it drop upon the zinc, he wets his knife and cuts the sheet away from the roll. The tube-makers now gather in their places, all on the same side of the table. The further edge of the rubber sheet is secured to prevent slipping, by running a small brush wet with naphtha, under the edge of the sheet. The wires, which are to form the core of the tubes, are laid upon a table at the back of the workers. They have been treated previously to a thorough coating of soft soap, after which a light coating of cement is brushed over them. A wire is laid upon the edge of the rubber sheet, the four tube-makers strike it gently to set the cement. It is then raised free from the table and rolled over upon itself three or four times, calipers in the hands of the workers determining its size. The foreman then goes to the further end of the table and by a single long skillful stroke cuts the tube free. After being rolled forward and back several times and possible blisters being pricked, the tube is swung over and deposited upon the rear table, which is covered with cotton cloth, to prevent the rubber from losing its shape.

Next comes the process of wrapping the tubes in cloth. Long strips of cambric, or other fine cloth, are thoroughly wet and laid upon the table, the edge is lapped over the tube, brushed down with the fingers, drawn tight, and with a quick roll wrapped securely. It is sometimes further tightened by a process of rolling, and is then packed in an iron pan ready for the vulcanizers. After the tubes are vulcanized the cloths are stripped off and the goods are ready to be bleached and finished. In removing the tubes from the wires it is customary to heat them slightly, and

for large tubes a jet of air is forced in to help slip them off. This kind of tubing has one advantage over that made of one thickness of stock, inasmuch as it is very strong and having no seam is not liable to break open.

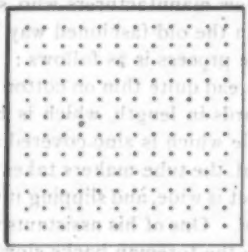
Another method of tube-making is to have the sheet spread as thick as the walls of the tube, and the sheet folded over itself and cut off obliquely. The two edges



Good and Bad Nails for Seaming.

The Cement Pail.

Nipple Form.



Case for holding Nipple Cores.

Nipple Core.

THE MANUFACTURE OF NIPPLES.

then fit together and form a tube. The most common method to-day, however, is to force the tubing out of a screw machine similar to that in which lead pipe is made.

NIPPLES.

The fine tracery of parallel lines that cover the surface of nipples is usually given to the rubber sheet by a corrugated roll. Another way, however, is to use square impression plates, upon which are placed squares of rubber which when pressed retain the fine lines which are graven upon the plates. The rubber sheet is next cut into nipple pieces by dies which are nearly heart-shaped. After the pieces have been delivered to the makers, the next process is cementing. The pieces are laid in piles, and then painted with a rubber cement, and spread upon tin plates to dry. The tools of a maker are a case in which are places for a certain number of metal nipple cores, cement cups with brushes, gloves for taking off nipples after being vulcanized, pans and plates. The cores are pear-shaped pieces of lead or type metal molded around iron pins.

In making up the maker takes a core, places it in the center of the rubber, draws the edges together, and with a rapid pressing of the thumb-nail against the two edges, closes the gaping seam. The core is then returned to its place on the case and another is covered. In this way the whole case is soon studded with pear-shaped rubber covered cores. Next is made the flange at the lower end. The operator presses firmly on the lower edge with an upward motion. This turns it over a little, and when continued around the stem, makes a small ring, and continued brings out the flange. The nipples are then packed in pans half filled with French talc. When packed they are taken away to the heater, the pen filled with talc and put in for the curing process. In nipple making it is imperative that the workers have strong thumb-nails. If brittle, the utmost care in trimming is taken, and they are oiled and watched with daily solicitude. A cracked or broken nail often makes a worker ineligible for this part of the druggists' sundry business.

Nipples are frequently dipped, that is, the core is plunged into a cement made of dissolved rubber, and then are dried and cured. They are also molded in some factories. Scores of different kinds are made and of late a large business has grown up in making of calf nipples, which are successfully used in bringing up the progeny of cattle on the bottle.

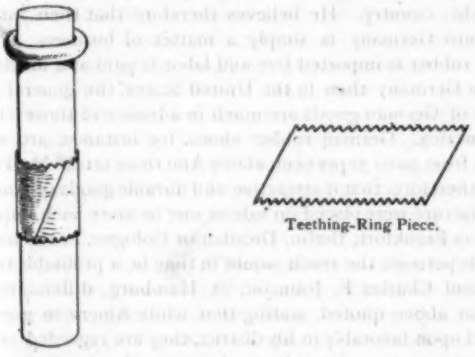
BULBS.

Long bulbs, such as syringes and atomizers, are made from two pieces of rubber; round bulbs, such as pumps and balls are made of three pieces. Odd shapes that call for variation from the established modes are daily encountered, a competent pattern-maker, however, will find little difficulty in so arranging the parts as to secure the best results, both in vulcanizing where the even swelling of the bulb in the mold must be considered, and also that the seams run so as to be protected as much as possible by the general contour of the bulb. Zinc or galvanized iron patterns are used for cutting out the parts of the bulb. Each piece cut must have distinctly skived edges. Considerable care is necessary in this, as the strength of the seam depends upon the smooth fitting of the edges. The three parts for hollow balls may, however, be cut with a die. If the bulb has a neck, small pegs of iron are first prepared by being cemented and wound with strips of rubber as a nucleus. The two or three parts of the bulb are then brushed with cement the whole length of the skived edge, after which they are thoroughly heated. When the rubber is thoroughly warmed and softened, the bulb-maker, taking a prepared peg, places the neck of one piece on one side of the rubber core, and another neck-piece on the opposite side, then presses them firmly together, and rolling the whole tube-shaped piece between thumb and forefinger, has finished the neck of the bulb. The next process is that of knitting the edges which form the seam. Holding the finished neck towards him in his left hand, with the thumb and forefinger of the right, he pinches the edges firmly together for nearly the whole distance round. Into the side aperture, which is left open, is poured a little water or liquid ammonia. The opening is then made still smaller, and as a final touch, the maker puts his lips to the orifice, blows full and hard into the inside of the bulb. The softened rubber, under this sudden pressure expands, the flattened shape is lost in a fuller and more rounded outline while the operator, with a quick nip of the teeth, closes the opening, the imprisoned air and water holding the sides apart in symmetrical corpulency.

After the makers have done with the now partly-made

bulb, it is passed to the trimmers who, armed with scissors with curved blades, carefully circle the seams, cutting away all unevenness, till the whole exterior is smooth and ready for the mold. In front of the trimmers are a number of shallow pans partly filled with chalk. Into these the bulbs are laid. The bulbs on leaving the chalk-pans are deposited in a small cylindrical box where they are dusted with talc so that the rubber cannot adhere to the inside of the mold. A mold-worker now taking one-half of a mold in his left hand, with his right gently forces a bulb into it, capping it with the second half. If the pattern-maker has done his part faithfully each will just fit its mold. If not, they will come out of the vulcanizer full of powder cracks.

The molds after being fastened are piled on cars that run upon small tracks into the vulcanizers. When the curing process is completed the vulcanizers are opened, and the cars, by a short extension of the track, are run under a simple shower bath which quickly cools them. They are then unkeyed, the molds twisted open and the bulbs taken out. If the work be well done the swelling of the liquid within its rubber prison has exerted so intense a



Teething-Ring on Mandrel. Teething-Ring Piece.

MANUFACTURE OF TEETHING-RINGS.

force that every line and letter within the mold is reproduced upon the outside of the bulb, while the sulphur combining with the heat accomplished the vulcanization.

The bulb next goes to the cylinder room, where it undergoes a thorough scouring and polishing in slowly revolving tumbling barrels. When taken out of the cylinders the dirty yellow color which the bulb bore on leaving the mold has disappeared, and it is now smooth, white, and finished. The neck being cut off the required length the bulb is ready for market, or for the various fittings which accompany it as adjuncts to the syringe or atomizer. Where a smooth clear-cut hole is needed in any part of the bulb, it is cut by a swiftly-revolving punch.

TEETHING-RINGS.

The best teething rings are made by hand, although the best "pads" are the product of the mold. The hand presses consists of the spreading the mixed stock in thin sheets that are carved with a tracery of fine lines. The

Breast Pump Bulb. Single Neck Bulb. Double Neck Bulb.

THE MANUFACTURE OF BULBS.

cutter then forms rectangular strips with pinked edges on two sides and skived edges on the other two. These are then placed round a wooden mandrel, the two skived edges knit together with the thumb-nails, and after cementing and drying the strip is rolled over and over upon itself until it forms a perfect ring. Umbrella rings and a host of others for various uses are made in this same manner.

WATER-BOTTLES AND FOUNTAINS.

In making these goods up the rubber compound, which is usually white, is first spread in thin sheets and may have either a smooth surface or one covered with a tracery of fine lines. Two sheets of rubber are placed together, the finished surfaces being outside, and the bottle is cut out by a large die. These parts are then put in cloth books and delivered to the makers, who have long double-decked zinc-covered tables. The kit of the maker consists of a cement cup and brush, a small steel hand-roller, a stitcher or tracing-wheel and a pair of curved scissors. Extending horizontally from the edge of the table, is a sickle-shaped piece of half-round iron upon which the bottle is placed, the iron being between the two halves. A strip of binding made of white rubber with pinked edges is then placed over the seam joining the two halves, rolled down hard with a hand-roller, and then stitched with a tracing wheel. Following this comes the little ornamental triangular piece at the lower end of the bottle and the two finished pieces for the neck which encircle the stopper and its metallic connections. When the bottle is finished a little French talc is blown inside of it to keep the plastic rubber from sticking together and it is then laid flat in a vulcanizing pan partly filled with French talc. It is covered about three inches deep with another layer of the same material and is then put through the process of vulcanization.

THE RUBBER INDUSTRY IN GERMANY.

THERE are in Frankfort-on-the-Main several important rubber stores with assortments comprising everything from hose and belting to the most delicate toilet articles and rubber surgical appliances. One of these houses, established when rubber-manufacturing first began, has kept pace with all the improvements in the rubber trade and is now the leading firm of its class in Southern Germany, but in an examination of its extensive stock Consul-General Frank H. Mason found nothing made in America but shoes. There are in the Frankfort district two important rubber manufactories, the Süddeutsche Gummi-Waaren Fabrik, at Offenbach, a manufacturing town several miles east of Frankfort, and the

Frankfurter Gummi-Waaren Fabrik, at Gelnhausen, about fifteen miles beyond Hanau. The first of these, established in 1881, makes principally rubber hose, packing, belting, and pencil erasers, and a small quantity of hard and soft rubber specialities. About one-fourth of the crude rubber used comes from Pará, via Liverpool, and the remainder from Africa, via Hamburg and Bremen. The Frankfurter Gummi-Waaren Fabrik, founded in Frankfort many years ago, was reorganized in 1870 with larger capital and removed to Gelnhausen, where extensive buildings were erected for its use. The goods manufactured are valued at $200,000 (?) a year, including railroad supplies, ships' materials, tennis shoes, pencil erasers, elastic bands, stationery, and belting and hose, the latter on a cotton web woven under an American patent owned by the Boston Woven Hose Co.; rubber clothing, etc. Many of the articles have supplanted in the local trade the goods of like classes formerly imported from England.

Another Frankfort dealer has a small factory in the suburban town of Sachenbausen where certain kinds of hose and packing are made.

In Hanover there is an extensive manufacture of rubber toys. The New York and Hamburg Gummi-Waaren Fabrik at Hamburg is a vigorous and successful enterprise, according to Consul-General Mason, combining American methods with German capital and labor under the protection of the German tariff. In the same city the New York Belting and Packing Co. have an immense establishment for the manufacture of those articles. Mr. Mason says that the factories in the district of Frankfort export six-tenths of their entire product to foreign countries; which indicates that the rubber industry has been successfully established there. He adds that Germany is not looking much for manufactured goods from any foreign country, and least of all from the United States.

There are three or four rubber factories in Mannheim and its vicinity, all recently established, producing cloth, boots and shoes, mechanical goods generally, hard rubber for surgical and electrical purposes and toys, etc. The product is valued at $1,000,000 per year, and is intended mainly for home consumption. Some of the goods are exported, however, to England, Italy, Spain, Russia and the United States, which takes a few hard-rubber goods for surgical purposes. The report from this point is made by Consul John F. Winter, who makes no mention of American rubber goods.

There are four rubber manufactories in Munich, besides which there are some two dozen stores in which rubber goods are sold. One of these handles only the products of a Berlin manufacturer. The range of goods produced is rather extensive, including air-proof goods, pillows, cushions, water-beds, enameled bottles and enemas, ice-bags, baths, seamless mineralized rubber and canvas hose, rubber tubing (delivery and suction) for wine, breweries, water, gas, steam and acids; machine belting (super-cotton canvas and rubber) valves, sheets, joints, washers, buffers, springs, steam-packing, hat-pressing bags and rings, gas-bags, bottle-stoppers and washers for bottle-stoppers, bicycle and wheel tires, mineralized molded strips for billiard purposes, enameled balls for perfumed sprays, mats, punched, corrugated, and in various designs; royal aromatic red mineralized bands and rings, ink and pencil erasers, tobacco pouches, waterproof garments and fabrics, bed-sheeting, teats and feeding-bottles. The Consul at Munich, Mr. F. W. Catlin, has not been able to learn that any American-made rubber goods are sold there. In fact, few rubber goods are imported, on account of the extent and excellence of the home manufactures.

It is hoped in Germany that the development of the German colonies, and the already subsidized steamship line, will in time increase materially the direct importation of crude rubber, especially from Africa, whence so much of the raw material used comes already.

Consul William J. Black, at Nuremburg, reports that the rubber goods imported from the United States consist of sheet rubber and rubber in pieces, to be worked up into pencil and ink erasers, the value of which reaches $20,000 a year. The feeling predominates among manufacturers that the American sheet rubber is the best made for erasers; that for durability, effectiveness and quickness in performing its work without destroying the paper, it has no equal, and its increased cost over that of the productions of other countries is fully offset by its superior quality. Some American rubber shoes have been offered here, but it is claimed that they do not last as long as the heavier goods made in England and Russia. The imports of rubber bands from the United States are said to amount to $5000 worth per year.

Consul H. F. Merritt, at Chemnitz, finds that no American rubber goods are imported directly but that some do reach his district through other German cities. Some American goods are mentioned as standing high in the estimation of local dealers, though handled less extensively than English goods, partly on account of the difficulty experienced in getting them, and partly on account of the difference in price.

Consul D. J. Partello, at Dusseldorf, believes that American rubber goods will compare favorably in quality with those of any other country. He believes therefore that their introduction into Germany is simply a matter of business. Though crude rubber is imported free and labor is paid at a much lower rate in Germany than in the United States, the general run of prices of German goods are much in advance of those charged in America. German rubber shoes, for instance, are sold at prices from 20 to 30 per cent. above American rates. Mr. Partello feels, therefore, that if attractive and durable goods of American manufacture were placed on sale in one or more such important cities as Frankfort, Berlin, Dresden or Cologne, in the hands of capable persons, the result would in time be a profitable trade.

Consul Charles F. Johnson, at Hamburg, differs from the opinion above quoted, stating that while American goods are looked upon favorably in his district, they are regarded as rather too high in price. He believes, however, that by the establishment of permanent agencies in the commercial centers of Germany, American manufacturers might extend their trade considerably. Hamburg is an important rubber market, the imports of crude rubber amounting to 6,039,943 pounds in 1887, to 7,556,559 pounds in 1888, and to 6,696,693 pounds in 1889. The average price paid in the latter year was about 40 cents per pound. The largest and best-known manufactory is located at Harburg, on the Elbe, near Hamburg. In this district nearly every class of goods is manufactured, about one-half the product being exported. The export to Russia was extensive in former years, but since that country increased the rate of duty, the exports have fallen off. The exports of rubber shoes from Hamburg in 1889 amounted in value to $325,820, of which Great Britain took $261,305, and Sweden $42,440. The exports of hard-rubber goods amounted to $450,027, of which Great Britain took $162,633, the United States $60,107, and Spain $32,972. The exports of other rubber goods amounted in value to $900,327, of which Great Britain took $414,510, the United States $146,172, and the Argentine Republic $59,052. The imports at Hamburg in 1889 included 5746 pairs of American rubber shoes, valued at $2528, and 87,667 pairs from Great Britain, worth $35,260. A few were imported also from Belgium, Portugal and Russia. Of other rubber goods, of the total importation of $425,000, about $367,000 worth came from Great Britain and less than $33,000 from the United States.

Consul W. D. Wamer, at Cologne, found rubber shoes imported extensively from Russia, and water-proof garments and a limited amount of belting are imported from England. In putting the question "How are American rubber goods regarded in comparison with those in other countries?" to a Cologne rubber-man, the answer was obtained that American manufacturers supply quite as good and quite as bad goods as come from any other country, much depending upon the demands of the buyers. There are some rubber manufactures in Cologne, chiefly of hose, belting, sheeting, matting and cords, to the amount of about $300,000 annually.

Consul Evans Blake, at Crefeld, reports an exclusive rubber store there, which is a branch of a concern in Cologne. The local demand embraces a general line of rubber goods except belting, which is not used. There is a large inquiry for rubber hose in sizes from three-fourths to one and one-half inches. Many fancy articles and articles of personal adornment, including earrings, medallions, bracelets, watch-chains and collar-and-cuff buttons are made of rubber. The goods sold here are mainly imported from England, only a small percentage coming from America and Holland.

Consul Aulick Palmer, at Dresden, reports one small rubber manufactory in his district, where surgical goods and various small patent articles are made. They are sold almost entirely in Germany and Austria. The rubber goods sold in this district are mainly of German manufacture, with the exception of boots and shoes, which are imported from St. Petersburg and Edinburgh.

THE RUBBER INDUSTRY IN FRANCE.

THE manufacture of India-rubber goods in France has been carried to a high degree of excellence in certain lines, particularly in small objects, such as tobacco-pouches, balloons, toys and elastic tissues for garters, suspenders and ladies' hats. As in other European countries, England, thanks to her well-organized looms for the production of light material, holds the supremacy in the French market as far as water-proof clothing is concerned. French manufacturers have devoted great energy to the manufacture of tubing and rubber shoes, and to holding the market for vulcanized rubber. There has been a constant and growing competition, however, from Belgium, Germany and Italy, leading to an increase of tariff rates in the hope of strengthening the home manufacturers. In 1836 the French factories consumed 72,000 pounds of crude rubber; in 1862, 1,800,000 pounds; in 1870, 2,500,000 pounds, and in 1890, about 4,000,000 pounds, representing $2,400,000 in value. The exportation of manufactured goods in the latter year exceeded 600,000 pounds. In spite of this apparent prosperity, however, some branches of the industry were suffering from a decline in the price of manufactured goods and decrease in the exportations. According to Commercial-Agent Francis B. Loomis, at St. Etienne, there were in the departments of the Loire and Rhone in 1881 twenty-three manufactories of the elastic tissues with 579 looms, while ten years later there were only twelve factories, with 219 looms. One item mentioned with respect to the cost of rubber-manufacturing in France is the considerable cost of coal for the vulcanizing process as compared with the cost in Italy or Germany. The manufacture of tissues is pursued chiefly in St. Chamond (a suburb of St. Etienne), Rouen, Nimes, Mayenne and Paris.

Consul Alton Angier, at Rheims, reports in his consular district one firm engaged in rubber manufacture, namely: E. Lefebure, F. Gougy & Co., of St. Quentin, Department of Aisne, makers of clothing textures and mechanical rubber goods. He makes mention also of the works of Lufbery & Chardonier at Chauny, Department of Aisne, who have two factories for manufacturing a substitute for rubber, and chemicals for express use in the rubber industry, considerable quantities of which are sent to the United States. The Consul reports that he is called upon frequently to authenticate the invoices of their shipments to this country. In Paris the manufacture of vulcanized rubber is an important industry.

In regard to the uses of rubber goods in France, it is stated by Vice-Consul H. D. Bennett, at Nantes, that throughout Britanny it rains during the greater part of the time, on account of which fact every man, woman and child of means possesses a rubber covering of some sort. Men's coats, ready-made, are sold at from $10 to $15 each, and when made to order from $15 to $18. "Rubber shoes without heels" are worn to a great extent, this seeming to be the term there for describing what are calfed "footholds" in this country. The quantity of rubber consumed in the rapidly-increasing velocipede "craze" is also mentioned. The "wheel" is coming into very general use, not alone with sportsmen and amateurs, but also in the army, requiring a large quantity of rubber for tires and pedals, which is furnished entirely by one English manufacturer. Mr. Bennett notes also the use of rubber for medical and surgical instruments and toys of all sorts, which are manufactured largely in France.

In the southwestern portion of the country, according to Consul Knowlton at Bordeaux, although the winter season is extremely damp and rainy, mackintoshes and rubber shoes are seldom seen. He mentions that in the use of such goods as hose, belting, gas and other tubing, the French are behind the times. Garden-hose, for example, is usually made of iron pipe, jointed at distances of about six feet and awkwardly supported upon two-inch wheels. It is not impossible to obtain in the larger cities any articles of rubber manufacture desired, but the French seem slow to avail themselves of modern improvements in this respect, as in many others.

Most of the Consuls in France say that the preference in rubber manufactures is given to England and that the French goods in most lines are regarded as second in quality, while the third place is given to United States. The extent of the imports from the United States is small, one reason being, perhaps, that our manufacturers as a class do not search new markets for their goods with sufficient care. They seem always ready and willing to export goods to Paris and other capitals of Europe, but neglect largely the provincial cities. Small tradespeople in the latter places cannot be expected to send directly to the United States and apply for goods to persons entirely unknown to them. If they go to Paris and see desirable American goods on sale they are obliged to pay some third party a heavy commission or profits. The success of English and German manufacturers in making sales in France is attributed to their being represented throughout the country by enterprising men, understanding the French language and familiar with the trade methods of that country. Travelling men go from Germany and England to France every year to sell rubber goods, but Consul William Harrison Bradley thinks that goods could be shipped by water from New York to Marseilles at

rates comparing favorably with overland rates from Germany or England, and as quickly, while a man with headquarters at Marseilles could cover all the south of France and north of Spain and Italy.

Consul Charles P. Williams, at Rouen, says that the half-dozen dealers in that city buy chiefly from French and Belgian manufacturers, feeling that they can thus obtain their supplies more cheaply than elsewhere. They buy rubber boots and shoes in Boston, however, as the American manufacture of these articles is thought to be superior to any other. These are costly after the payment of heavy duties, and meet with a limited sale as articles of luxury. The names of the rubber dealers at Rouen are:

Boulard (Veuve), No. 28 Jeanne d'Arc street.
Bomdon (G), No. 19 Quai de la Bourse.
Fauvel, No. 107 Lafayette street.
Valee, H., No. 4 de la Ferme street.
Welby de Ruffigny, No. 7 Jeanne d'Arc street.

The statements of importations of crude rubber into France show the consumption of large quantities of Africans.

COMMENTS BY A FRENCH VISITOR.

TO THE EDITOR OF THE INDIA RUBBER WORLD: I am glad to send you some remarks on the foregoing article on the rubber industry in France.

Rubber manufacturers in France will not make rubber shoes because they have suffered losses in the past from having unsold stocks in mild winters.

I do not think that the difference in the price of coal is important enough to make an obvious difference in the price of rubber manufactures.

There are men's coats sold in France as low as five dollars; those sold at $10 must be of very good quality.

Rubber tires for bicycles have not been generally satisfactory.

My opinion is not the same as that expressed above in relation to a preference for English goods. American rubber goods are regarded as first in quality and well finished. English rubber is preferred for surgical instruments.

African crude rubber is generally of very inferior quality.

Tissues are imported from England and Germany, but are inferior to American tissues. Yours truly, F. VIEUILLE.

New York, March 8, 1892.

THE RUBBER-GOODS TRADE IN TURKEY.

By Z. T. Sweeney, Consul-General at Constantinople.

THE principal articles imported are rubber overshoes and water-proof garments. About 7500 boxes or cases, each containing an assortment of fifty pairs, are sold annually here from the month of September to April. As regards quality those of the North British India-Rubber Co., of Edinburgh, and the Russian-American India-Rubber Co., of St. Petersburg, are considered here the best. There has been an attempt by some dealers to sell American rubber overshoes, and they imported a small quantity, but I am informed that they could not carry on the trade satisfactorily.

The trade is generally carried on for the account of the different European manufacturers, who keep stocks here during the winter season. The agents keep up the prices according to the quality of their goods, and sell to all the wholesale houses of this capital, and to provincial customers. The overshoes must be made out of thick material and in fashionable shape, with red lining, these being the requirements of this market, and should be here before the month of October. The approximate proportion of the different kinds which are demanded is 60 per cent. men's; 10 per cent. boys'; 20 per cent. women's; 6 per cent. girls', and 4 per cent. children's. I give below a statement of the quantities imported and prices realized by the various makers:

MANUFACTURERS.	Cases of 50 pairs sold per year.	Price of men's (per case).	Price of women's (per case).
North British India-Rubber Co.....	1,500 to 2,000	$36.30	$28.60
Russian-American India-Rubber Co.	350 to 500	36.30	27.50
Liverpool India-Rubber Co.....	1,200 to 1,500	32.47	24.20
Hamburg India-Rubber Co.	1,200 to 1,500	26.37	22.00
Hutchinson, Paris.....	1 500 to 2,000	26.37	22.00

The goods are delivered in Constantinople at the above prices, from agents' stores, free of freight, insurance, sundry charges, and customs, which amount together to about 12 per cent. *ad valorem*.

The quantity of coats imported in different shapes, and chiefly for gentlemen and boys, annually for the wants of the capital and that of the provinces, is calculated to about 12,000 to 15,000 pieces. The largest portion comes from Manchester. Glasgow and London, Great Britain; Paris, France; Hamburg, Germany; and Vienna, Austria, send the most fashionable of these water-proof coats. The selling prices here run from $1.93 to $10.89 per piece on the same conditions as for overshoes.

As regards other India-rubber articles, there is only a small importation of sheet valves, pipes, and tubes for machinery, and some other goods for chirurgical and medical use. The value of all these goods is $75,155.69 per annum, according to the last statement of the custom-house authorities.

The best method for introducing American rubber goods in this market is for American manufacturers first to decide to follow the prices of the competition, and then intrust their business into the hands of a clever agent, who by means of timely advertisements and a good exhibition of their goods would be able to make a way for them. In addition to this the American manufacturers must bear in mind that special shapes and making up of the overshoes will be required according to the wants of the customers, and that all garments must be of double texture, provided with hoods, and made much wider than those used in England, France, or Germany, as the people of this country are rather stout, have large shoulders, and wear the waterproofs over thick winter overcoats.

Mr. E. J. Merstrauff, a well-known merchant of this city dealing largely in rubber goods, will be glad to assist American rubber-manufacturers in the work of introducing their wares.

What a Diving-Suit Costs.

THERE is a great deal of rubber in the suit of a submarine diver, and the goods have to be made of the best material and in the most careful manner. Human life is at stake and personal discomfort to an eminent degree is always present. The whole outfit is furnished by rubber manufacturers and consists of a three-cylinder air-pump with water-tank around cylinders for cooling air, bolt helmet, diving-dress, 150 feet of air-hose, with couplings, belt weights, diving-shoes with lead or iron soles, wrist-expanders, rings and clamps, mittens, chafing-pants, life-line, snap-tubing, cement, etc., all billed by one firm at $687.